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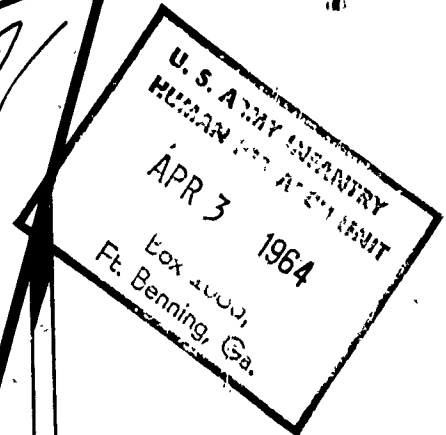
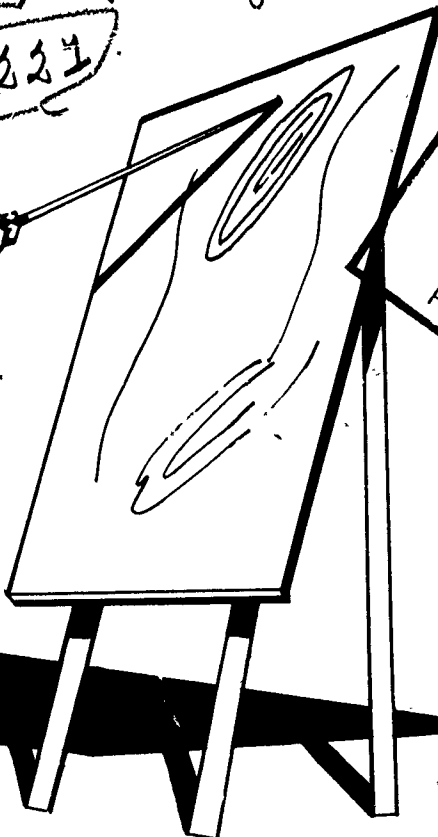
Report of the

6 INFANTRY INSTRUCTORS' CONFERENCE

15 - 19 JULY 1963

Report of

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FORT BENNING, GEORGIA

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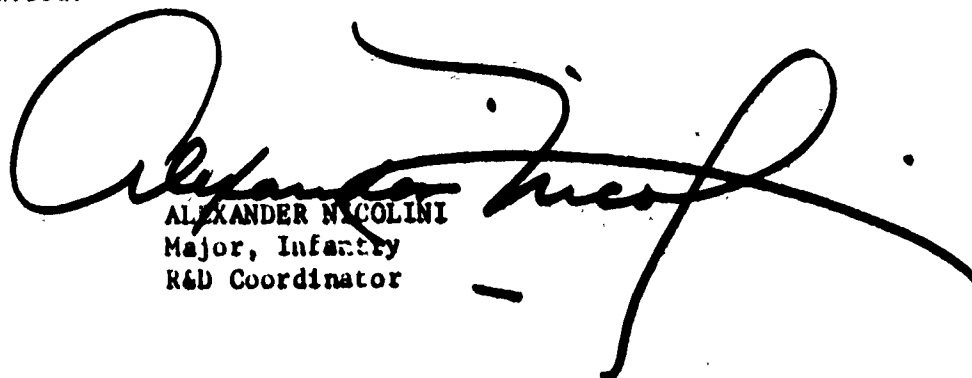
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FOR THE CHIEF:



**ALEXANDER NICOLINI
Major, Infantry
R&D Coordinator**

15 - 19 July 1963

AUTHORITY: The conference was convened under the provisions of Paragraph 5b(3), Annex Q, USCONARC Training Directive, dated 30 September 1961.

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MAJOR GENERAL CHARLES W. G. RICH
Commandant, United States Army Infantry School
Commanding General, United States Army Infantry Center



BRIGADIER GENERAL JOHN NORTON
Assistant Commandant
United States Army Infantry School

AGENDA FOR THE INFANTRY INSTRUCTORS' CONFERENCE
FORT BENNING, GEORGIA
15 - 19 July 1963

Monday, 15 July 1963

<u>TIME</u>	<u>PRESENTATION</u>
0745 - 0755	Movement to Building 35
0755 - 0800	Assemble at Pratt Hall
0800 - 0810	Commandant's Welcome
0810 - 0825	Outline of Conference by Chief of Academic Staff
0825 - 0835	Break
0835 - 0925	"Infantry Communications" Scope: A conference on the Infantry Battalion and Brigade Communication Systems to include an orientation on new items of communications equipment.
0925 - 0945	Coffee Break
0945 - 1005	"Basic Marksmanship Training - Trainfire I" Scope: Conference covering recent changes in the marksmanship program to include basic, alternate, and proficiency marksmanship courses, use of the .22 caliber rifle in these programs; facilities required; and status of training literature on basic marksmanship training.
1005 - 1015	Break
1015 - 1025	"Quick Fire Instinct Shooting Training Program" Scope: Conference covering the results of tests on "quick fire" instinct shooting and its effect on future marksmanship training programs.
1025 - 1040	Movement to Hook Range
1040 - 1050	Break
1050 - 1100	"Automatic Rifle Orientation" Scope: Conference and firing demonstration showing the capabilities and limitations of the AR 15, USAIB M14(M), and standard M14(M) automatic rifles in the engagement of both point and linear targets.
1100 - 1125	"Antitank Weapons, Mines, and Davy Crockett" Scope: Conference and demonstration covering the status of weapons and training literature and the characteristics of the M21 AT mine, M18A1 AP weapon, 90mm RR M67, and the 66mm AT rocket M72, and a firing demonstration with the 90mm RR M67, M18 A1 AP weapon, ENTAC, and Davy Crockett.

1125 - 1150 **"Weapons Display"**
 Scope: Static display of Infantry weapons with qualified instructor personnel available to answer questions on each weapon.

1150 - 1200 Movement to Main Post

1200 - 1300 Lunch Break

1300 - 1315 Movement to Eubanks Field

1315 - 1405 **"Airborne Training"**
 Scope: A conference and demonstration covering the airborne training course.

1405 - 1415 Movement to Pratt Hall

1415 - 1425 Break

1425 - 1515 **"Pathfinder Operations"**
 Scope: A lecture on mission, history, organization, and capabilities of Army Pathfinders. The prerequisites and content of the Pathfinder Course and a static display of Pathfinder equipment.

1515 - 1700 Open Time (Visits to Instruction Departments as Desired)

Tuesday, 16 July 1963

0740 - 0810 Movement to Bleacher 390

0810 - 0950 **"Vehicles Available to the Infantry Commander"**
 Scope: Integrated conference and demonstration covering: characteristics, capabilities and limitations of newer tactical vehicles; recent aspects of vehicular maintenance; and commander's inspections of ground tactical vehicles.

0950 - 1000 Movement to Victory Pond

1000 - 1050 **"Ranger Orientation"**
 Scope: Integrated lecture and demonstration on Ranger training, to include a brief history of the American Ranger.

1050 - 1115 Movement to Sightseeing Field

1115 - 1200 **"Army Physical Fitness Program"**
 Scope: Integrated conference and demonstration to include: degree and type of command emphasis required; types of programs to include results of Army-wide physical training survey; weight control program; the 6-12 plan and individual means of maintaining fitness; physical fitness requirements for service schools; fitness testing requirements to include physical combat-ready fitness standards and demonstration of PCPT, AMPFT-Male, and the Airborne Trainee PFT; and maintenance of unit records for physical fitness training status reports.

1200 - 1315 Lunch Break

1315 - 1330 Movement to 2d Infantry Division Area

1330 - 1715 "2d Infantry Division Orientation Tour"
Scope: Tour of 2d Infantry Division area, training facilities and headquarters; conference with Commanding General on recent Division projects and operations.

Wednesday, 17 July 1963

0745 - 0755 Movement to Building 35

0755 - 0800 Assemble at Pratt Hall

0800 - 1150 "Infantry Brigade in Counter guerrilla Operations"
Scope: Conference covering operations against guerrillas in a cold war situation. Problem encompasses the following: evaluation of the civil and military situation; conduct of police operations in conjunction with local civil authorities; security of installations and lines of communication; conduct of harassing operations; conduct of reaction operations; conduct of elimination operations; and logistical support for operations. Area of operation to be in vicinity of an international border of a country friendly to guerrillas. Emphasis on command and staff actions required due to operation being conducted in a country in which only other US military agency is a MAAG.

1150 - 1315 Lunch Break

1315 - 1505 "Mechanized Infantry Battalion Task Force in Area Defense"
Scope: Conference covering the planning for area defense by a mechanized Infantry battalion task force. Includes material to develop the general and special situation with emphasis on overall operational environment; development of the commander's decision and commander's concept to accomplish his mission; obstacle planning; employment of armored personnel carriers; unit fire planning; and employment of nuclear weapons. Troop leading by the task force commander is integrated throughout.

Thursday, 18 July 1963

0745 - 0755 Movement to Building 35

0755 - 0800 Assemble at Pratt Hall

0800 - 0850 "Airmobile Operations - Infantry Brigade"
Scope: Conference covering the planning of an airmobile operation by an Infantry brigade in conjunction with a ground attack to reinforce an isolated task force and to link up with the ground attack. Includes development of the ground tactical plan; control aspects of landing; air movement and combat service support considerations.

0850 - 0900 Break

0900 - 0950 "Logistical Support for Infantry and Mechanized Infantry Battalion and Brigade"
Scope: Conference covering: logistical operations in the Infantry and mechanized brigades and battalions, with emphasis on the battalion and brigade trains area; functions of division support command elements supporting the brigade.

0950 - 1010 Coffee Break

1010 - 1055 "Department of Nonresident Instruction"
Scope: A conference outlining the mission, organization, and major responsibilities of the department.

1055 - 1105 Break

1105 - 1155 "Orientation on HUMRRO Training, Research and Development"
Scope: A lecture presentation on HUMRRO research and development activities. Emphasis is placed on research products which should be of interest and use to Infantry instructors.

1155 - 1315 Lunch Break

1315 - 1335 "Missions, Functions and Organization of US Army Combat Developments Command Infantry Agency"
Scope: Self-explanatory. Security classification: SECRET, NO FOREIGN EXCEPT UNITED KINGDOM AND CANADA

1335 - 1355 "The Ten Top Priority Infantry Developmental Materiel Items"
Scope: To present the requirement, description, current status, and estimated date of availability of those items for which the Infantry has the greatest need. Security Classification: SECRET, NO FOREIGN EXCEPT UNITED KINGDOM AND CANADA.

1355 - 1415 Coffee Break

1415 - 1445 "A Visualization of Infantry-Type Combat Operations in the 1970 - 1980 Time Frame"
Scope: A conference presentation on the visualization of Infantry-type operations during the very-long-range time frame. The conceptual battlefield, the envisioned type of equipment required on the battlefield, and an appraisal of the individual soldier of the future will be included. Security Classification: SECRET, NO FOREIGN EXCEPT UNITED KINGDOM AND CANADA.

1445 - 1700 Open (Visits to Instruction Departments as Desired)

Friday, 19 July 1963

0750 - 0800 Movement to Sandy Patch Test Area

0800 - 0950 "United States Army Infantry Board"
Scope: A static display of development and newly standardized Infantry weapons and equipment. Security classification: SECRET, NO FOREIGN EXCEPT UNITED KINGDOM AND CANADA.

0950 - 1005 Movement to Building 35

1005 - 1010 Assembly at Pratt Hall

1010 - 1100 "Project Team"

Scope: A briefing to familiarize the conferees with background events which led to the Air Mobile Project. Summarizes: the organization of 11th Air Assault Division and 10th Air Transport Brigade; the mission and organization of the Training, Evaluation and Control Group; and the expansion and test program projected through CY 1965. Security classification: SECRET, NO FOREIGN EXCEPT NONE.

1100 - 1110 **Break**

1110 - 1150 **"Assistant Commandant's Forum"**

Scope: Assistant Commandant monitors a question period by conferees. Department Directors and Agency Chiefs are present to assist in answering specific details, as appropriate.

1150 - 1200 **Assistant Commandant's Closing Remarks**

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CHAPTER 1

COMMANDANT'S WELCOME

MAJOR GENERAL C. W. G. RICH

Good Morning and Welcome, Gentlemen.

It is a distinct pleasure for all of us at Fort Benning to have as guests, the various representatives to the Infantry Instructors' Conference of 1963. I extend to each of you our most cordial welcome. Our entire Post and its facilities are at your disposal and we sincerely hope that your visit will be enjoyable as well as professionally profitable.

I realize that most of you have passed through the Infantry School at one time or another during the courses of your careers and are familiar with Fort Benning. I am certain that you will find the Post just as active as when you last visited it - probably more so. However, a number of important changes have taken place in past months. Let me bring you up to date.

The 2d Infantry Division was recently reorganized under the new ROAD concept and now rotates units to Europe for six-month training exercises. The 11th Air Assault Division was activated here in February to test and develop the Howze Board's concepts for movement and support of combat units in the battle area by use of helicopters and transport aircraft. And, Fort Benning also is now home to several research organizations - such as the Infantry Board, the new Combat Developments Command Infantry Agency, and the Infantry Human Research Unit - which are busily engaged in scientifically determining what weapons, training, equipment, and organizations our Infantrymen must have to attain success on tomorrow's battlefields.

The Infantry School, in keeping pace with modern technology and the increasing demands placed upon it, also has undergone many changes. In May, the School was reorganized, and now has a Brigade and Battalion Operations Department and a Company Operations Department. They help us more effectively meet the instructional requirements of our modern Army. An Office of Advanced Studies now provides the School with a focal point for reflective thought and the formulation of ideas involving the future of the Infantry. And, you may have noticed that construction is well underway on the new Academic Building to house the School and accommodate the preparation of our future Infantry leaders. A short tour will be given to you.

Regardless of all these changes and developments, however, one factor remains constant, and that is the mission of the Infantryman. We feel that it has not changed greatly - either in nature or importance - since the days of his earliest battles 188 years ago. Although he can be propelled over great distances to the battlefields, and though he is armed and supported with the most lethal weapons in the history of warfare, his mission is essentially the same - to close with and destroy the enemy.

However, all of these changes serve to illustrate the salient characteristics of the period in which we now serve. Simply, we live in an era where change is the rule and where such changes move hand in glove with continual scientific research and serious study. And, progress in the entire military field will continue to be directly related to the rapid progress achieved in the field of science and by our various research units. Actually, we live in an age of great technological change - in an era in which each member of the military must keep constantly abreast of the latest developments.

You, as "Professors of Infantry" at our various service schools, have the tremendously important task of informing the remaining members of our military forces of the most current Infantry developments. I say your job is tremendously important for good reason. The versatility of our Infantryman makes him essential to operations across the entire scope of war -

from cold war through general nuclear war. The Army's ability to apply only the exact amount of force required to cope with any given situation is one of its unique and most valuable capabilities. And, whenever and wherever this force is applied, it is invariably built around our Infantryman. It is absolutely essential, then, that the members of all our branches and services have a thorough understanding of the capabilities - the vital roles - of our modern Infantryman.

Gentlemen, that is the primary purpose of this conference - to provide you with the most current information regarding developments in Infantry doctrine, tactics, techniques, and hardware.

We at Fort Benning have been anxiously awaiting the start of this Conference. I might add that a large number of personnel have been hard at work for many weeks planning and preparing this program in order that it will provide the most complete coverage of significant developments as possible within a five-day period. I believe you will find it highly informative and interesting.

A series of conferences and demonstrations by the Instruction Departments of the School will familiarize you with current thinking on communications systems, training techniques, and utilization of our newest weapons and vehicles. And, ROAD concepts will be thoroughly covered during tactical presentations by the Brigade and Battalion Operations Department.

In addition, you will be briefed by members of the Infantry Board, the Infantry Human Research Unit, and the Infantry Agency on their important activities and projects. You will be particularly interested in the presentation by the Infantry Agency regarding Infantry-type combat operations visualized for the 1970-1980 time frame. And, the Training, Evaluation, and Control Group will provide information concerning the revolutionary new air mobile concepts which they are testing in conjunction with the 11th Air Assault Division.

I urge each of you to enter into these instructional periods wholeheartedly. You bring with you a wide variety of experience and a tremendous amount of knowledge. Remember, this is a conference, and we welcome your thoughts, your solutions, your questions. I request that you challenge us - for this conference must serve as a forum if we of the Infantry School are to benefit, too. Further, your thought-provoking ideas will be of benefit to your fellow conferees as well - and will serve each of us as Infantry instructors.

Colonel Cornett, Chief of the Academic Staff, will further outline the conduct of the Conference in a few moments. However, I would like to say that just prior to the conclusion of the Conference, General Norton will conduct an Assistant Commandant's Forum. At that time, together with the Department Directors and the Agency Chiefs, he will attempt to clarify any questions that you may have remaining. We intend for this to be a no-holds-barred event, so if you encounter problems that you feel should be explored further, or areas where the School could be of additional assistance to you, feel free to state your piece. We will gladly present our frank views, opinions, or assist in finding the answers to your problems.

We have many worthwhile ideas to present during the week. When you depart Fort Benning, we hope that you will carry with you a great deal of knowledge of benefit in the important assignments which you now hold. We want you to go forth armed only with the most current information - and ably prepared to disseminate this information throughout the various branches and services. If we attain this goal, your time and our time will have been well spent.

I believe the knowledge you carry with you will be well received, for our branch has progressed rapidly in the last few years. For example, the "push-button" and "biggest bang for the buck" theories have quietly moved off stage, and a growing realization of the importance of

the Infantryman has emerged. Again, it is realized that the Infantryman, with his rifle always ready, backed by courage, resolution, and capability, is the one who has the Nation's destiny in his charge. As you know, it is the indomitable Infantryman who stands ready - alert for instant response to any type threat by our Nation's enemies.

Gentlemen, it has been a pleasure talking with you. Again, may I say we are happy to have you here. I know you will enjoy your stay.

Thank you . . .

CHAPTER 2

OUTLINE OF CONFERENCE

COLONEL JACK G. CORNETT
Chief of the Academic Staff

I would like to reiterate General Rich's welcome by saying it is certainly a pleasure to have you as conferees to the 1963 Infantry Instructors' Conference - particularly those of you from the Royal Canadian School of Infantry and the Allied Liaison Officers. This is the first time we have had a chance to get together like this since the special conference we held for ROAD in November 1961.

I will not insult your intelligence by reading the agenda. It is contained in the booklet entitled "Infantry Instructors' Conference" that you received upon your arrival at Fort Benning.

The conference plan was based upon what we, the Infantry School, felt Infantry instructors at other service schools needed.

The presentations of the conference will be made by the Instruction Departments of the School and test and development agencies at Fort Benning.

The basis for the selection of presentations during the Conference was what we thought would bring you up to date in current Infantry doctrine, tactics, techniques, and also the current instructional techniques as used at the School. The sequence of scheduling is based mainly on effective use of your time, rather than relative importance or simple to complex.

The presentations of the Human Research Unit, the Infantry Board, and the Combat Development Command Infantry Agency will give you an indication of what is coming in the field of human aspects and warfare, how the Infantry desires to influence the Research and Development Program, how we expect to operate in the future, and the status of items now under test by the Infantry Board.

We will take you out to the Second Division for a briefing on the division's experiences in converting to the ROAD organization. I know many of you have been involved in teaching the ROAD organization, but I doubt if many of you have had the practical experience of converting or operating under this type organization. The people from the Division are happy to provide such an orientation and will welcome your questions.

The conference would not be complete if we did not tell you about the very important testing that is currently taking place at Fort Benning. Therefore, we have scheduled a briefing by the Training, Evaluation and Control Group on the 11th Air Assault Division.

It is recognized that the series of presentations we have scheduled for the conference will not cover the individual needs of each of you. Therefore, we have planned time in the schedule for you to visit the departments of the School and the Human Research Unit to discuss your individual areas of interest. These periods, we feel, are most beneficial to you individually.

Your area of interest queries that were received by mail have been forwarded to the appropriate departments to enable them to prepare for your visits. Some of these concerned operations at field army or theater level. Since the Infantry School instruction is through Infantry Airborne and Mechanized Brigade level, with limited instruction at division level to serve as a transition to the Command and General Staff College, many of the questions should be addressed to the Command and General Staff College or the Army War College, the proponents for these

subjects. However, the Brigade and Battalion Operations Department will give you the best considered opinion on your higher-level questions.

In the packet of material you received upon arrival was a booklet containing the missions of the departments of the Infantry School and the Human Research Unit. You are requested to utilize the accompanying questionnaires addressed to the departments to indicate your particular area of interest. The questionnaires are designed to give the departments forewarning so as to prepare for your visits. The time scheduled for visits to the departments is 1515 to 1700 hours, Monday, and 1505 to 1700 hours, Wednesday. The guide officers will arrange for transportation to and from the departments you desire to visit.

There is also a questionnaire attached to the booklet that is to be utilized for topics you desire to have included in the Assistant Commandant's Forum. The Assistant Commandant, General Norton, will choose the questions to be discussed during the forum. The questions that are not discussed during the forum due to the time limitation will be included in the final report of the conference, or by separate correspondence.

Now for some other areas. As the Commandant mentioned earlier, the new Academic Building is under construction. The tentative date for completion and turnover to the School is September 1964. In addition to other modern devices, it will be equipped for closed circuit television. We're going to give you an orientation tour through the building so you can see where you may be working on your next tour at Benning.

The use of Programmed Instruction is currently under investigation by the Infantry School. It is envisioned that programmed instruction will initially be used for pre-class assignments and eventually for blocks of instruction.

Also, we are conducting an application study on Automatic Data Processing. Our current system is inadequate. We envisioned that a larger computer unit could be used in scheduling classes, student personnel administration, academic records and analysis management, educational research and development, materiel and inventory accounting, and programs of instruction.

It is hoped that the Conference we have designed will improve your own instruction at the various service schools as well as increase your confidence in our own branch - the Infantry.

After the conference is completed, let us know any areas in which you feel we should have placed more emphasis. Address your letters to the Coordinator of Instruction. Also, feel free to call anyone you know here on your problems. If he doesn't know the answer, he can get your question to someone who does.

CHAPTER 3

INFANTRY COMMUNICATIONS

Captain James W. Johnston, Jr.
Instructor, Applied Communications Committee,
Communications-Electronics Department

SECTION I. INTRODUCTION

Effective command and control of Infantry operations is highly dependent upon a responsive communication-electronic system and therefore it is appropriate that your conference begin with this important area.

We will brief you on the changes in communications systems and organizations that have taken place in the ROAD concept, and the new communication-electronic equipment presently becoming available to Infantry units or in development for possible near future adoption.

I am happy to report that Infantry units are now receiving, in substantial numbers, new equipment which takes advantage of such discoveries as transistors, printed circuits, and modular construction. As you will see, this has given us equipment smaller in size and weight. Another advantage has been more maintenance-free hours of operation together with a greater ease of maintenance in the field.

The new equipment is a step forward but we cannot stop here. Problems still exist within Infantry units which need solution. Our briefing will cover some of the developments in progress to help solve these problems. We are constantly trying to identify new problem areas within Infantry units so we can influence developments toward their solution.

SECTION II. ROAD COMMUNICATION SYSTEM

Have you considered how the ROAD concept affected Infantry Communications? I am sure you are aware that communications within Infantry units changed to an extent with the advent of ROAD. Regardless of the concept however, the basis for establishing communication has not changed; that is, communication facilities are provided on a "need to communicate" basis. Therefore, the communication systems have changed very little, but to delineate the changes that have occurred we will discuss the ROAD communication systems and will point out major differences in comparison to ROCID.

First, the Infantry rifle platoon, the lowest echelon within the Infantry that has its own internal communication system. (Figure 1)

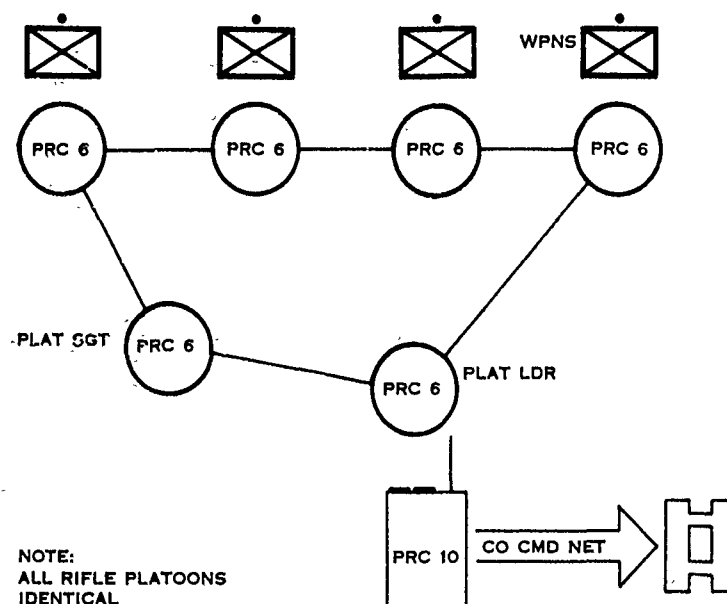


Figure 1. Infantry Rifle Platoon Command Net.

This is the radio net of the Infantry rifle platoon. This system is the same as under ROCID. The platoon leader has his own Command Net using the Radio Set AN/PRC-6. He also has an AN/PRC-10 Radio for entry into the Company Command Net.

At rifle company level, the communication system has undergone a slight change. Two ground surveillance teams, now organic to the rifle company, are in the Company Command Net. (Figure 2)

Here you see the Company Command Net of the Infantry rifle company. The basic radio used in the net is the PRC-10, which has a planning range of 5 to 8 kilometers. The stations in the net are the commander, executive officer, and subordinate leaders and elements of the company. Notice the ground surveillance teams are in this net.

At the present time, the GRC-3 thru -8 series of vehicular radios and the PRC-10 are being used. Therefore, our discussion of radio nets will cover the current sets with which we are familiar. The new FM vehicular and portable sets will be discussed later.

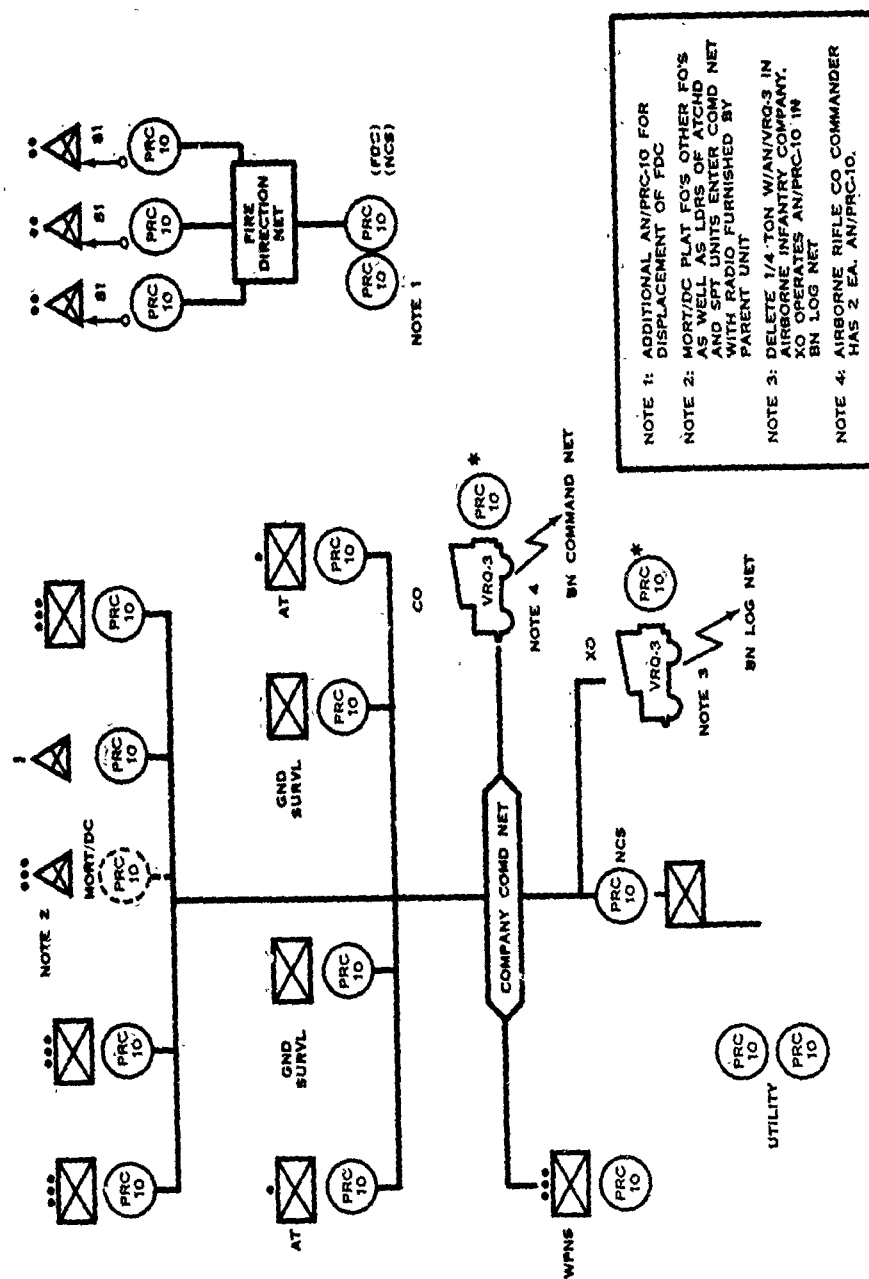


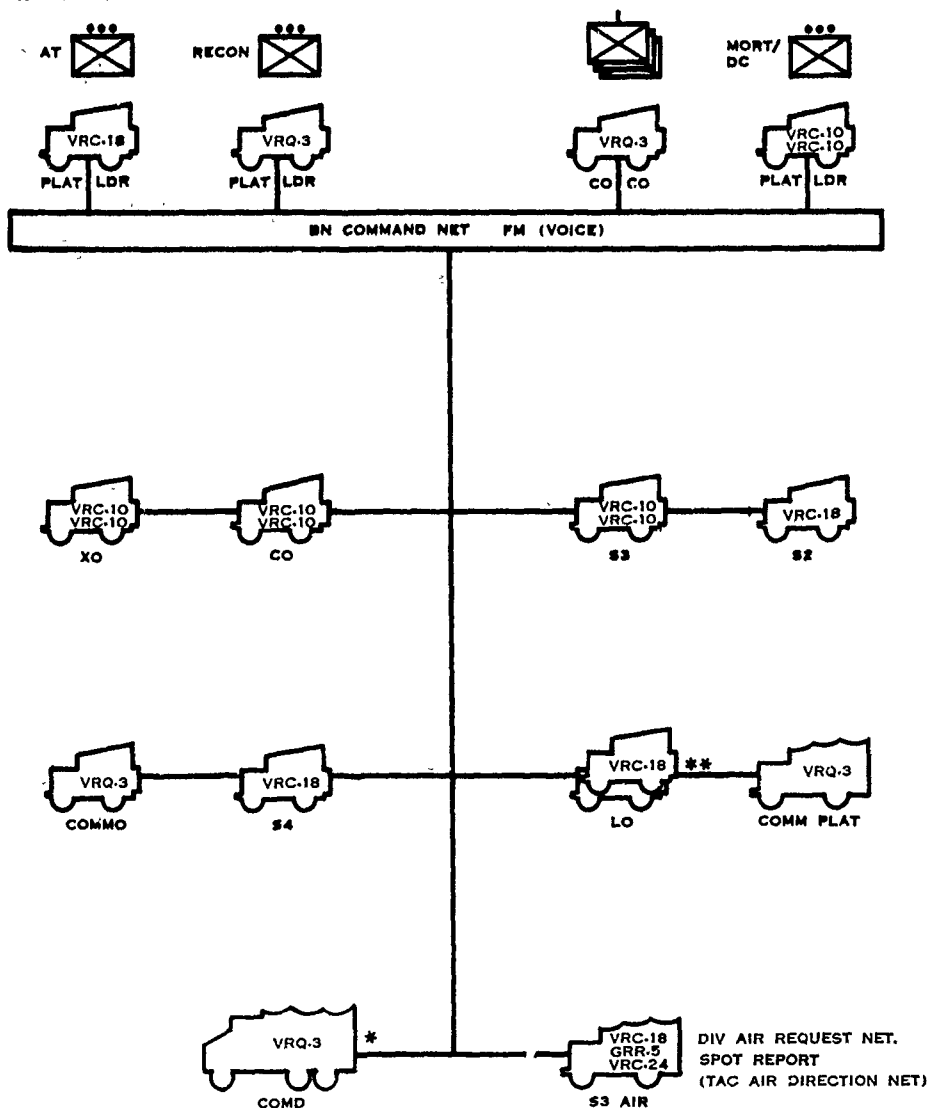
Figure 2. Infantry Rifle Company Command Net.

At battalion level, we find that the battalion commander has a command net. (Figure 3)

The subordinate stations in this net are the principal staff officers, special staff officers, and subordinate commanders and leaders of the battalion or attached units.

Notice that there are many subordinate stations in this net. Since only one message can be transmitted at a time, the net must be closely supervised. To gain this close supervision, the net control station (NCS) is operated by personnel of the battalion headquarters section, and is located in the battalion operations center. Also notice that the battalion commander, the S3, and the NCS have the capability of entering the Brigade Command Net as subordinate stations.

The battalion also enters the Brigade Radioteletype Command Net. We will discuss this net in a few minutes.



* NONE IN AIRBORNE
** ABN HAS VRC-10

Figure 3. Infantry Battalion Command Net.

To handle administrative and logistical traffic, the battalion operates a Battalion Logistical Net (Figure 4). The stations in this net are the battalion XO, S4, rifle company executive officers, and other personnel within the battalion whose primary functions are of a logistical nature.

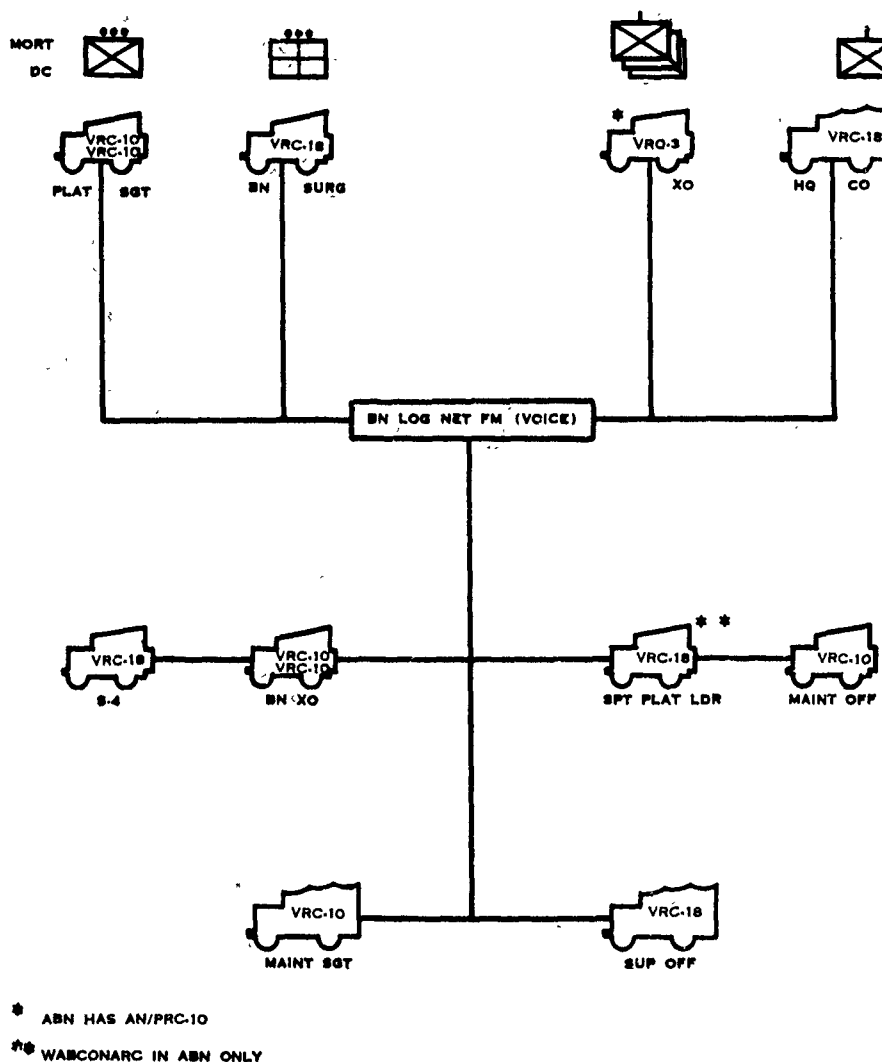


Figure 4. Infantry Battalion Logistical Net.

The Brigade FM Command Net (Figure 5) is quite similar to the Battalion Command Net from the standpoint that the stations in this net are the principal staff officers, special staff officers, subordinate commanders, and leaders. The principal difference is the addition of the aviation officer. Of interest are the facilities provided the commander and S3. They are authorized a 1/4-ton vehicle, and an Armored Command Reconnaissance Vehicle (ACRV), each of which have FM radios for entry into the Brigade Command Net and the Division CG Command Net. The brigade also operates a Radioteletype Brigade Command Net using the AN/GRC-46 radio. This net provides communication at greater ranges than the FM Command Net and can accommodate a greater volume of traffic through use of teletype.

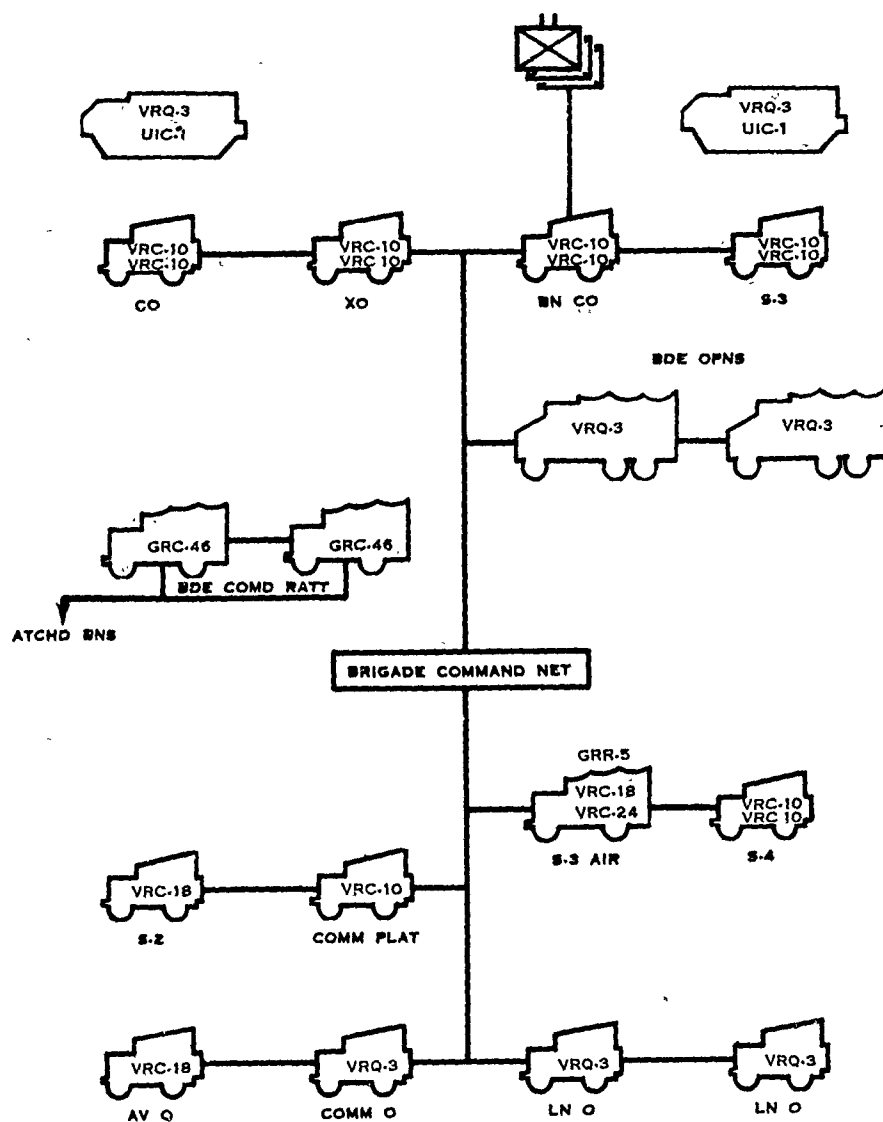


Figure 5. Infantry Brigade Command Net.

The brigade also has a logistical net that is used mainly for communication between the administrative and supply personnel within the brigade.

Entry into the division area communication system is provided by the Forward Communication Company of the division signal battalion. The company provides a Command Signal Section in direct support of each brigade as well as three forward area signal center platoons. These elements of the signal battalion provide VHF radio relay facilities (telephone-type communications) and radio wire integration stations throughout the division sector.

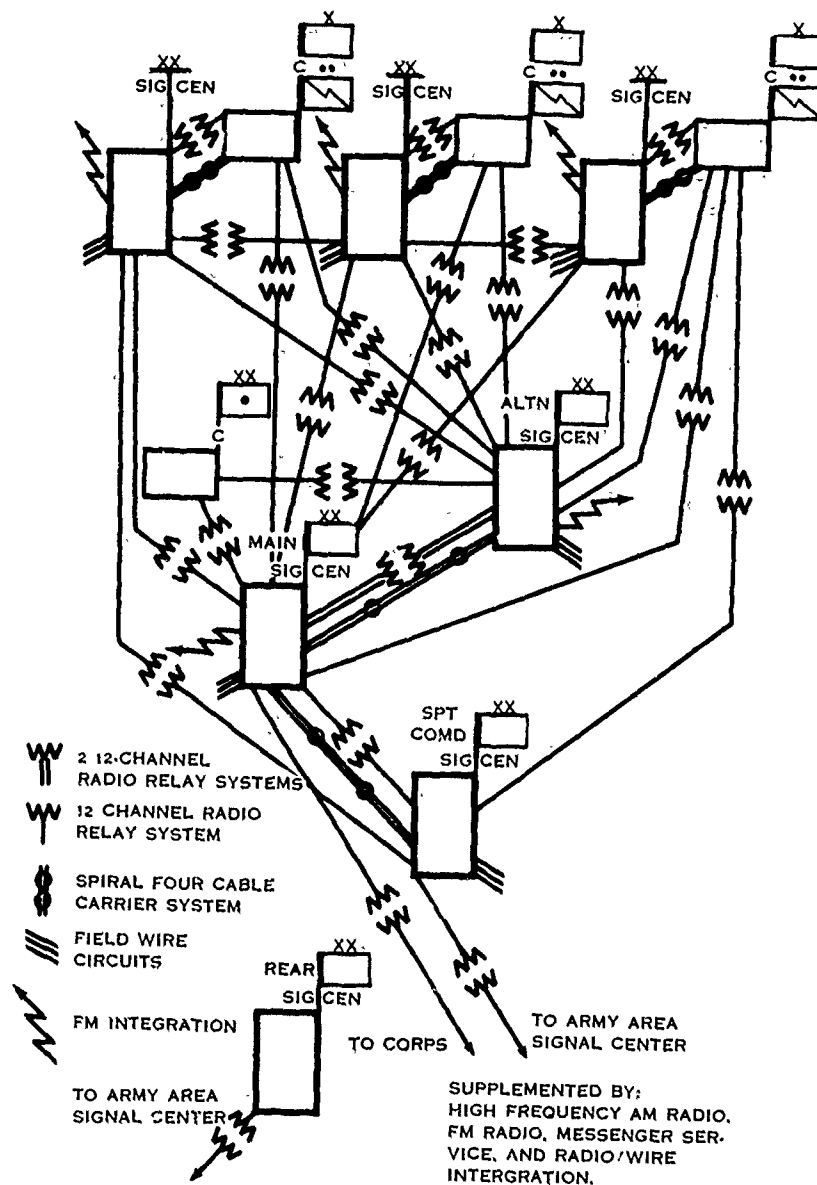


Figure 6. Division Area Communication System.

Here (Figure 6) you see a type division area communication system where the brigade enters the system through the unit in direct support of it. Other units are provided entry through the various signal centers established throughout the division area. As you can see, these elements are either tied directly or indirectly to the various command and support elements of the division. This system replaces the wire lines that were laid between the various division elements and the combat units. In addition to being much faster to install than wire, the flexibility of the system is best demonstrated by placing a nuclear detonation on Division Main.

Fire support and combat support elements at all levels maintain radio systems to insure that the commander is provided adequate and timely intelligence, target acquisition, information, and fire support. The battalion and brigade also enter the Division Air Request Net for Air Force tactical air support. To control air strikes, the battalion furnishes the men and radios for the tactical air control officer from the Air Force.

The ROAD commander cannot be only ground communications-conscious. f with the increased emphasis on air mobility the consideration of air-ground communications with army aircraft is important. Although separate radios are not provided by TO&E for this designated purpose, army aircraft are equipped with radio set AN/ARC-44 which is compatible with our present FM ground radios and provides the commander this essential link.

The Commander also has means of communications other than radio available.

Messenger service is available throughout the entire level of command. Although somewhat slower than radio or wire when installed, messenger service is still our most secure means of communication, and is the only means below division level for transmitting such items as maps and overlays.

Visual and sound are also available means of communications. However, they find their greatest use at platoon and squad level. At company and higher level, they are used mainly for emergency or warning purposes.

The final means available at all echelons from Platoon up is wire. Many times the wire system is referred to as the "lifeline of the unit." We will not discuss wire systems as it would be a virtual repetition of the radio systems. Just keep in mind that the wire system of a unit parallels and supplements the radio communication system, and generally every station in a radio net also has the capability of entering the unit's wire system.

One of the most noticeable changes from the ROCID to the ROAD concept has been in the assignment of communication personnel. Again, let's turn our attention to the rifle platoon, and note the change.

The rifle platoon leader has one radiotelephone operator assigned to assist him in his communication needs. This is a change from the ROCID concept wherein the platoon leader was not authorized an operator by TO&E.

The weapons platoon has four radiotelephone operators assigned, one less than under ROCID.

There is no change in personnel at the company headquarters level; however, the total communication personnel within the company is now 12 as compared to 10 in the ROCID rifle company. This is an aid to communication.

The greatest changes have been within the battalion communication platoon. The communication platoon in the battle group was authorized 1 officer and 46 enlisted men. The battalion communication officer is a special staff officer as well as the communication platoon commander. In the battle group we had a communications officer and a communications platoon leader.

The significant change is that the radio operators for the staff sections are now assigned to the battalion headquarters section, and not to the communications platoon. This accounts for the major reduction in communications platoon personnel.

SECTION III. COMMUNICATION EQUIPMENT.

So far we have been concerned only with the means of communication available to the various tactical elements within Infantry units. We will now focus our attention on the communications equipment used within the Infantry.

Most changes in communication within Infantry units from platoon through brigade have been in the radio equipment. Although our present equipment is adequate, it is too large and bulky, requires extensive operator and maintenance personnel training periods, in some instances does not provide the required range without relays, and the frequency spectrum has become extremely crowded. Our communication equipment must be durable, small and lightweight, and also provide ease of operation and maintenance.

The equipment must be versatile for use of all echelons within the brigades and battalions, regardless of the combat arm or concept of employment.

The US Army Electronics Research and Development Laboratories have developed a family of FM radios to provide the service just described. Using transistors to the maximum extent, power requirements, weight, and size are greatly reduced. Use of modular construction permits relatively easy repair by module substitution. This makes field maintenance quick and easy.

The overall reduction of size, weight, and simplification of repair and maintenance, when multiplied by the tens of thousands of combat area radios required in a field army, should ultimately release many men for combat service who have been formerly used in logistical operations.

The smallest member of the forward area FM radios is the Squad Radio, the AN/PRC-6. (Figure 8)

This radio needs no introduction to anyone here. It is the same size as a loaf of Quartermaster issue bread and weighs 6 - 1/2 pounds.

Currently under development is a new lightweight radio designed to replace the PRC-6. It is unique, in that the transmitter and receiver are separate items. (Figure 9)

This is a mock-up of an experimental model of this radio. The actual configuration of the final product will be determined through extensive field tests.

The receiver weighs 8 ounces and has a battery life of 24 hours of continuous operation. The receiver may be clipped on the helmet; however, it also may be carried in a pocket or clipped to the equipment harness.

This permits conformance with photo which doesn't show a helmet.

The transmitter weighs 16 ounces, has a battery life of 24 hours, with a 1-to-15 on-off ratio. Both sets have 200 channels in the 47-57 megacycle band.

The transmitter has two channels. The low power channel will operate over a nominal range of 500 meters for use by the squad leader to exercise control over selected individuals in his squad. Normally, the individuals will not have transmitters. The high power channel will be used by the squad leader operating at ranges up to 1-1/2 kilometers in the Platoon Command Net. The squad leader's receiver will be tuned to the Platoon Command Net channel. The platoon leader will utilize the high-power channel to communicate with his squad leaders.

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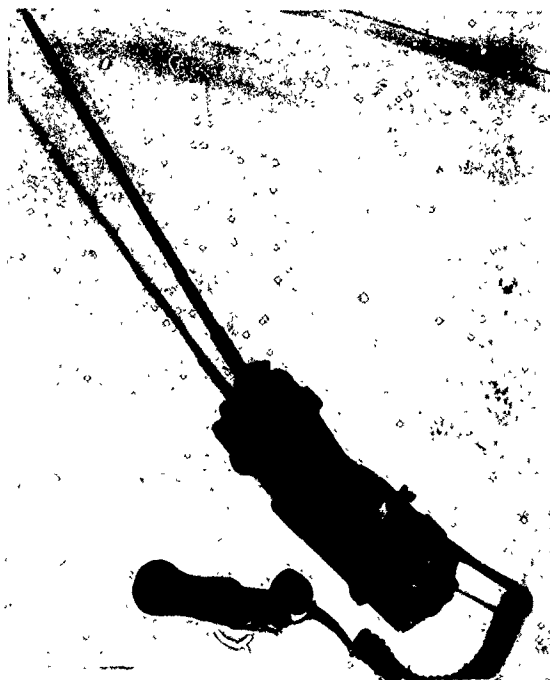


Figure 8. Portable Radio Set AN/PRC-6.

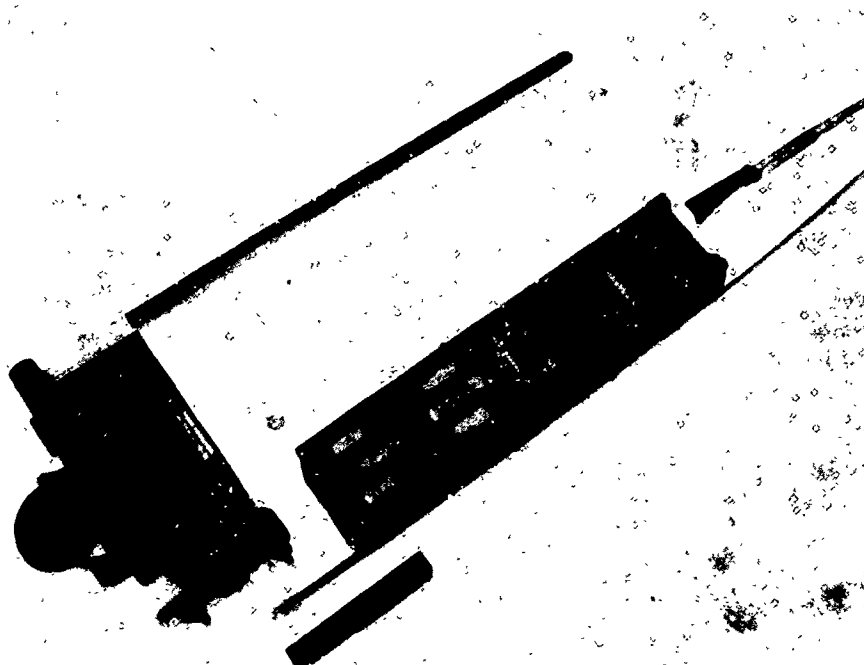


Figure 9. Lightweight Radio Sets AN/PRT-4, AN/PRR-9.

There are sufficient channels available to prevent interference among the squads and platoons within radio range. In addition, the radio has the same channel spacing as the new FM radios and will net with all portable and vehicular FM radios within its frequency spectrum.

The reduction of weight and size of the lightweight radio, as compared with the PRC-6, will reduce the combat load of the individual soldier, and permit greater freedom for use of his hands.

The Signal Corps expects delivery of 75 sets from the contractor in August of this year. After a thorough field evaluation, which should bring out any changes required, the set will be ready for mass production and delivery to the field.

This is the present FM back-pack set used within the Infantry (Figure 10). I do not think that I need to reintroduce the PRC-10. This set is also being replaced with a new radio that will replace the PRC-8, PRC-9, and 10, the present portable radios of the Armor, Artillery, and Infantry respectively.



Figure 10. Portable Radio Set AN/PRC-10.

This is the AN/PRC-25 radio. It has the same channel capacity, reliability, and maintenance features of the VRC-12, and is compatible with this new family of radios which will be discussed in a few minutes. (Figure 11)

It has detent, or click-type tuning to the exact frequency, and does not require calibration.

This set is much easier to put into operation, thereby reducing operator training time.

The set can be vehicular mounted using the same mount as the AN/VRC-12 series.

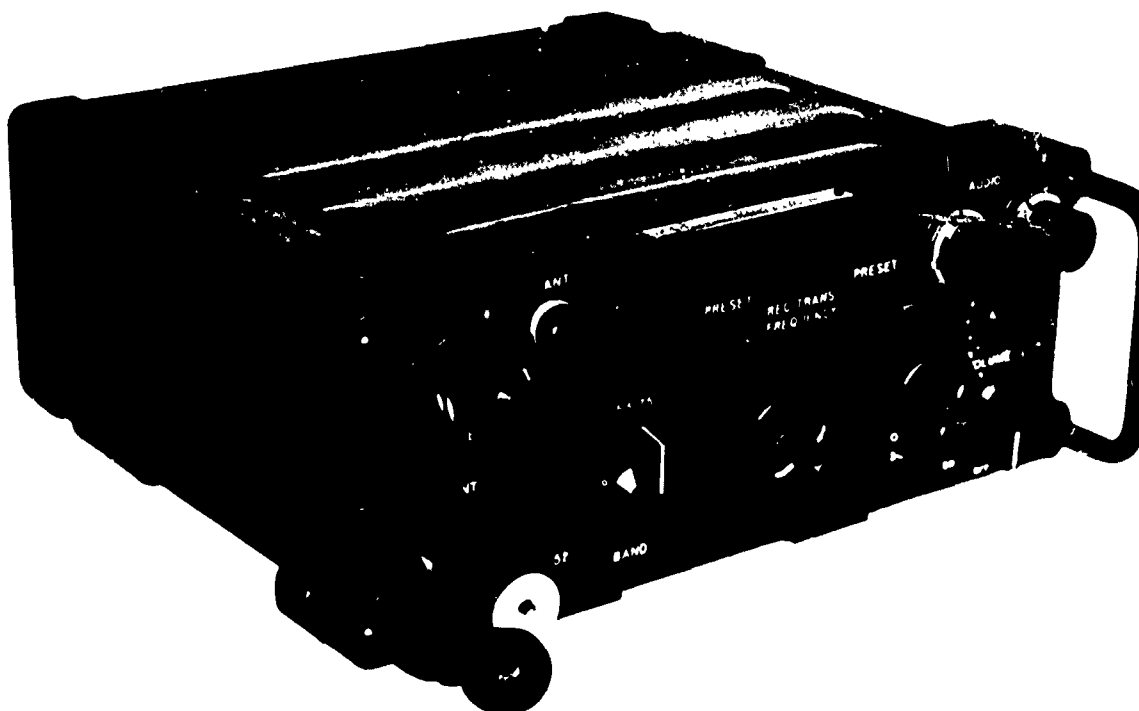


Figure 11. Portable Radio Set AN/PRC-25.

This is one of the current vehicular mounted frequency modulated radios of the GRC-3 thru -8 series. It is the AN/VRC-18. (Figure 12)

Here is the AN/VRC-47, a manually tuned model of the family. It will replace the AN/VRC-18. Although the set is smaller in size and weighs approximately 30 pounds less than the VRC-18, it provides exactly the same facilities; that is, one receiver-transmitter and an auxiliary receiver. (Figure 13)

The new sets are frequency modulated, and provide a common frequency coverage for Infantry, Artillery, and Armor units which is of great significance to the field commander. The radio also provides 920 channels as compared to 350 with the GRC-3 thru -8 series. These

radios are designed to provide a planning range of 32 kilometers as compared to 16 kilometers for present sets. These new radios are easier to operate and maintain than the present series. The basic receiver-transmitter is being produced in two versions. The one you see here has Manual Tuning (Figure 14) and the other has both Manual and Automatic Tuning through use of push-buttons, which provides presetting ten channels. The push-button version is primarily for use in armored vehicles where the set is inaccessible to persons using it, such as a tank commander. Through use of a remote device, the channels may be changed. This particular set is the VRC-12.

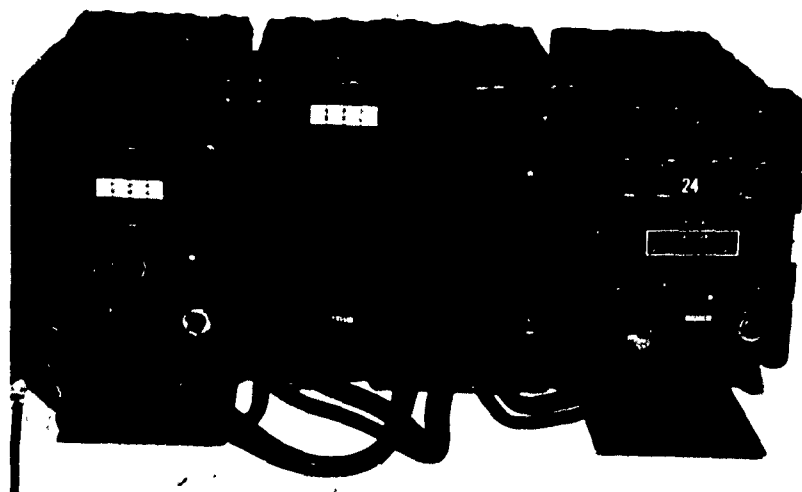


Figure 12. Vehicular Radio Set AN/VRC-18.

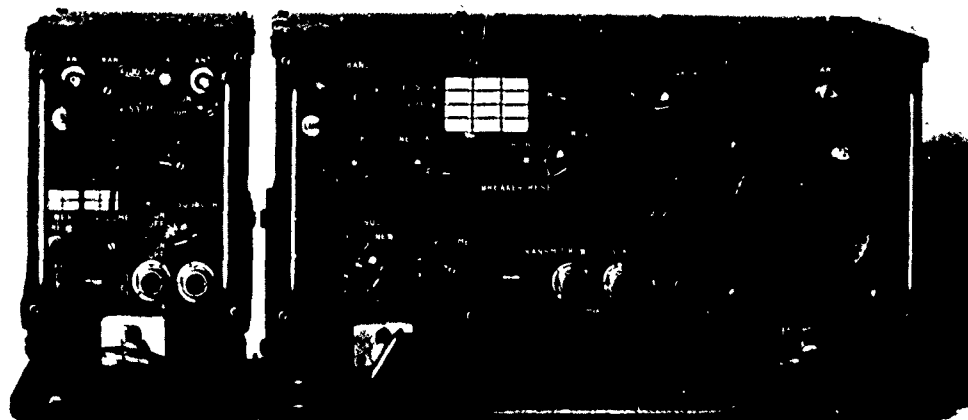


Figure 13. Vehicular Radio Set AN/VRC-47.

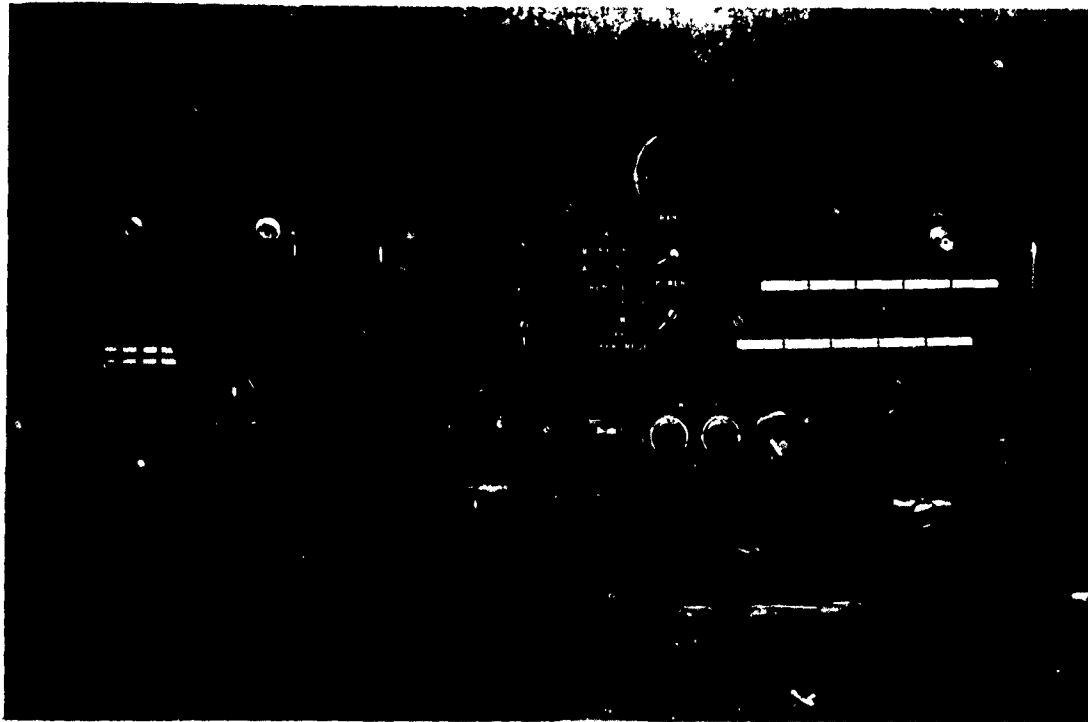


Figure 14. Vehicular Radio Set AN/VRC-12.

This family is in production at the present time and is being issued to combat units in Europe. It is anticipated that it will require from four to five years to completely phase-in this equipment. The new equipment is compatible with the -3 thru -8 series, which will alleviate phase-in problems.

The 11th Air Assault Division, here at Fort Benning, has also been issued this equipment. The new FM radios which we have just discussed, although not the ultimate, do represent major improvements in size, weight, range, channels of communications, and simplification of operation and maintenance.

In February of this year, the Communications-Electronics Department began training radio mechanics on the maintenance and repair of the VRC-12 series and expects to start training on the AN/PRC-25 in the near future.

Resident Officer classes began receiving instruction on these radios on 1 July.

With the advent of the new FM radios, it became necessary to develop an airborne radio that would permit communication between the aircraft and the combat troops on the ground equipped with the new family of radios. One such radio is the AN/ARC-54, which will replace the ARC-44 in use at this time. (Figure 15)

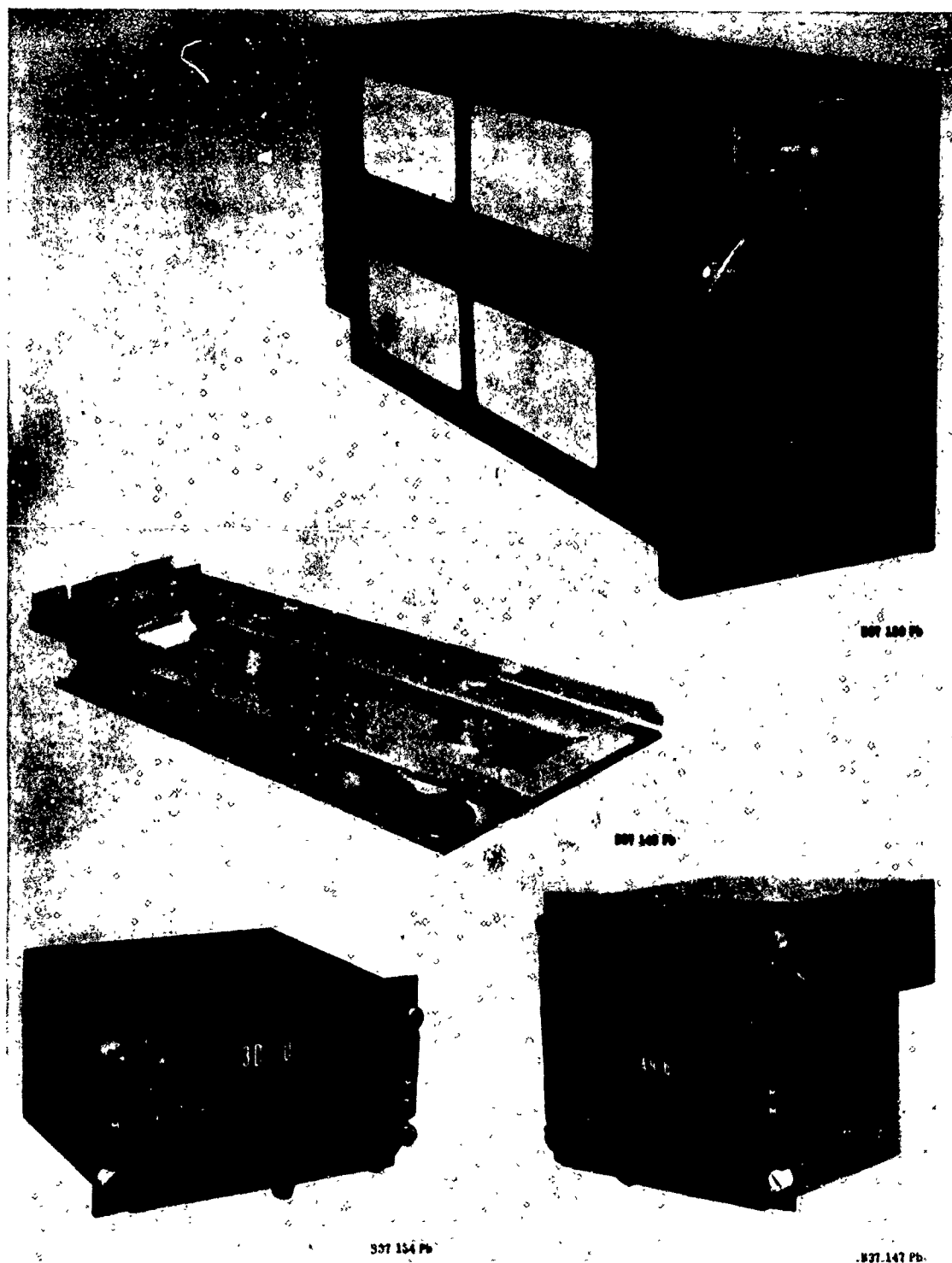


Figure 15. Army Aircraft Radio AN/ARC-54.

This is radio set AN/ARC-54, now adopted as a Standard "A" item of equipment. Here, you see the receiver-transmitter and the various components. It will be installed in army aircraft and will inter-operate with the VRC-12, PRC-25, and the squad radios. The radio will enable the commander, staff officer, or observer in the aircraft to communicate directly with the ground combat units. The radio can also be used as an aerial relay station. The radio will be installed in new aircraft as produced. Present aircraft will be retrofitted as required.

Another concept in communication equipment under development is the use of single sideband techniques. One of the primary advantages of using single sideband equipment is the fact that for the same operating range as our present radios, the power requirement is materially reduced. This makes possible a major reduction in the size and weight of the equipment. Single sideband also provides us a great increase in the available channels for communication.

The Army Electronics Research and Development Laboratory has developed a family of vehicular single sideband radio sets which will soon be available in the field. (Figure 16)

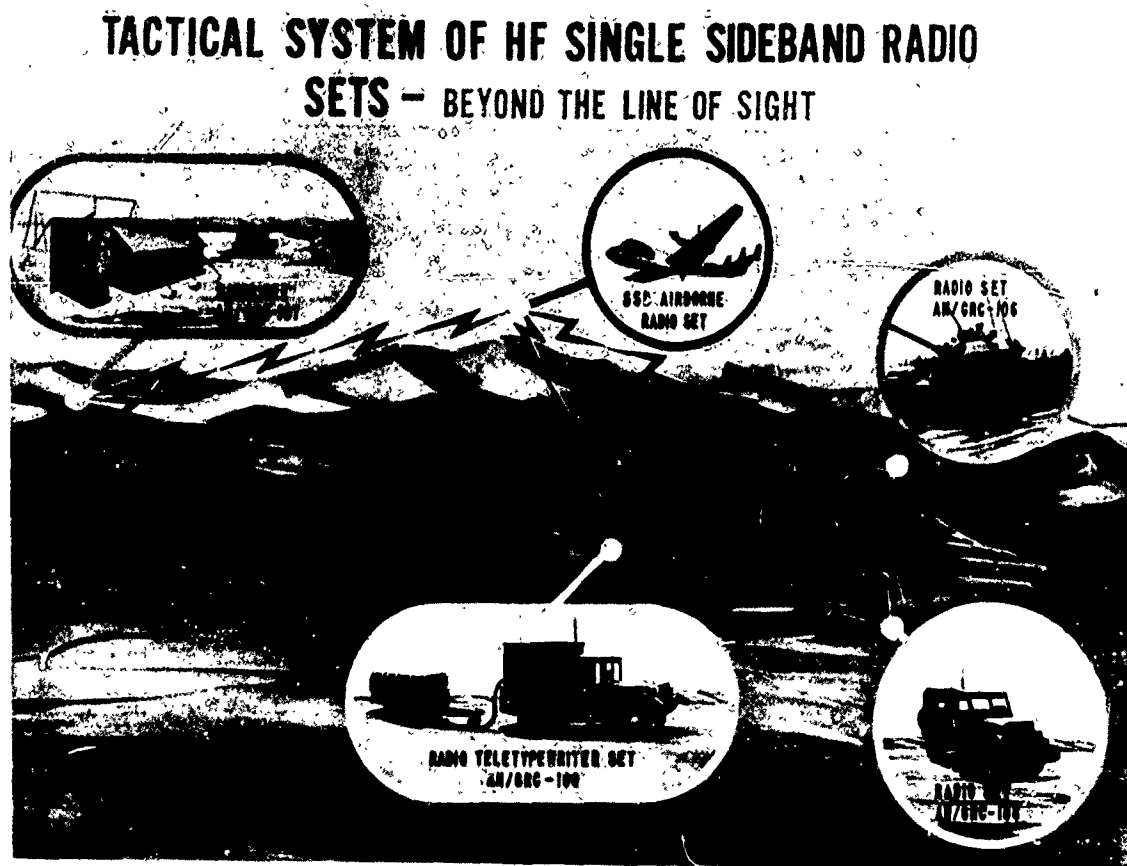


Figure 16. Concept of Single Sideband Equipment.

This figure illustrates a concept of the single sideband tactical radio family consisting of 50- and 100-mile sets. The 50-mile set, AN/GRC-106 (on the right), is intended for mounting in jeeps, tanks, and other vehicles. The AN/GRC-107 (at the upper left), is a 100 mile single sideband radio for voice and CW. The AN/GRC-108 (at the lower center) utilizes components of the AN/GRC-107 and provides a complete voice, CW, radioteletype facility for 100-mile operation. An airborne set to operate with the ground single sideband family will also be developed. Manpack sets which will net with these equipments are under development.

The 50-mile jeep- and tank-mounted single sideband set is the AN/GRC-106. This set will replace the GRC-19, one of the present AM sets organic to the battalion, brigade, and division which provides voice and CW to a distance of 80 km. (Figure 17)

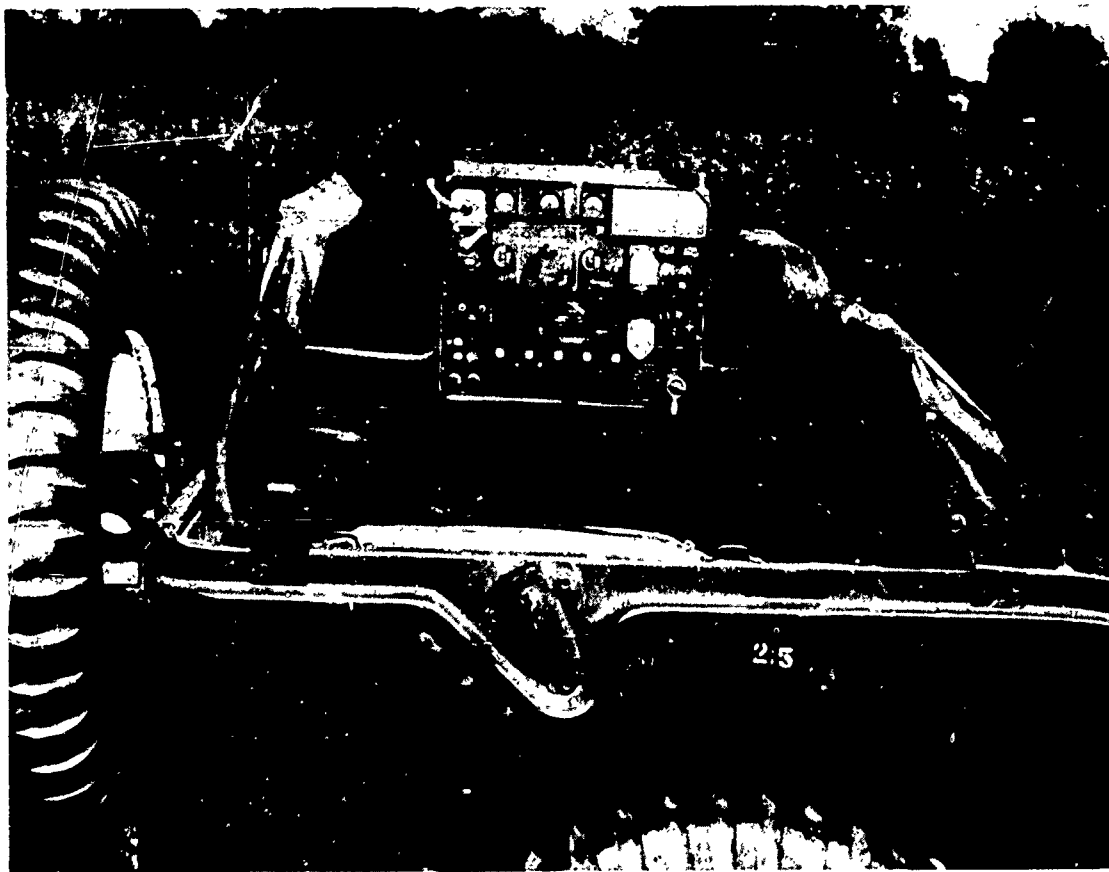


Figure 17. Vehicular SSB Radio Set AN/GRC-106.

The GRC-106 will provide about twice the number of effective channels available with the AN/GRC-19 and will be less than one-half the weight of the GRC-19. It will also operate in the double sideband mode, compatible with existing AM sets. In the single sideband mode, it will provide greater range and will weigh less than one-half of the AN/GRC-19. It was service tested at Fort Bragg last summer, accepted, and a contract for production will be let in fiscal year 64.

The AN/GRC-108 is the high-powered member of the tactical single sideband family. It will provide in a single 3/4-ton shelter, all the necessary equipment for transmission and reception of single sideband CW, compatible AM, and full-duplex radioteletype. It will be powered from a generator or from commercial sources. A most important advantage of this equipment is its high powered capability packaged into a small transportable shelter replacing larger, less powerful equipment now mounted in a 2 1/2-ton truck.

The receiver and transmitter of this set have been laboratory tested with favorable results. Completed test-model installations are being fabricated and will be ready for field test next winter.

The AN/GRC-106, AN/GRC-107, and AN/GRC-108 use many common components thereby greatly reducing the maintenance and supply problem in the field.

The single sideband family we have just discussed will materially improve our longer range radio communications and represents a quantitative jump in tactical radio communications for the Infantry.

As you know, radio communications in the forward areas have depended a great deal on net-type operation. Many times, net operation wastes time, manpower, and equipment, since both equipment and manpower must be tied up in monitoring messages which frequently concern other subscribers. There is also excessive waiting time when one station in the net system wishes to contact another subscriber in the net.

An ideal communication system in many applications would be one that has the operational flexibility of providing private line or party line-type operation such as our present wire systems, but possessing the mobility and flexibility of our radio systems.

A start has been made in the realization of this through the development of a radio central concept which uses single sideband techniques. This consists of bringing a number of radio loops to a central point where subscribers can be patched together for private line communication or for conference or net-type operation as required. The equipment is the AN/USC-3, radio central system. It provides two way telephone type communications and can accommodate six two-way conversations at one time. (Figure 18)

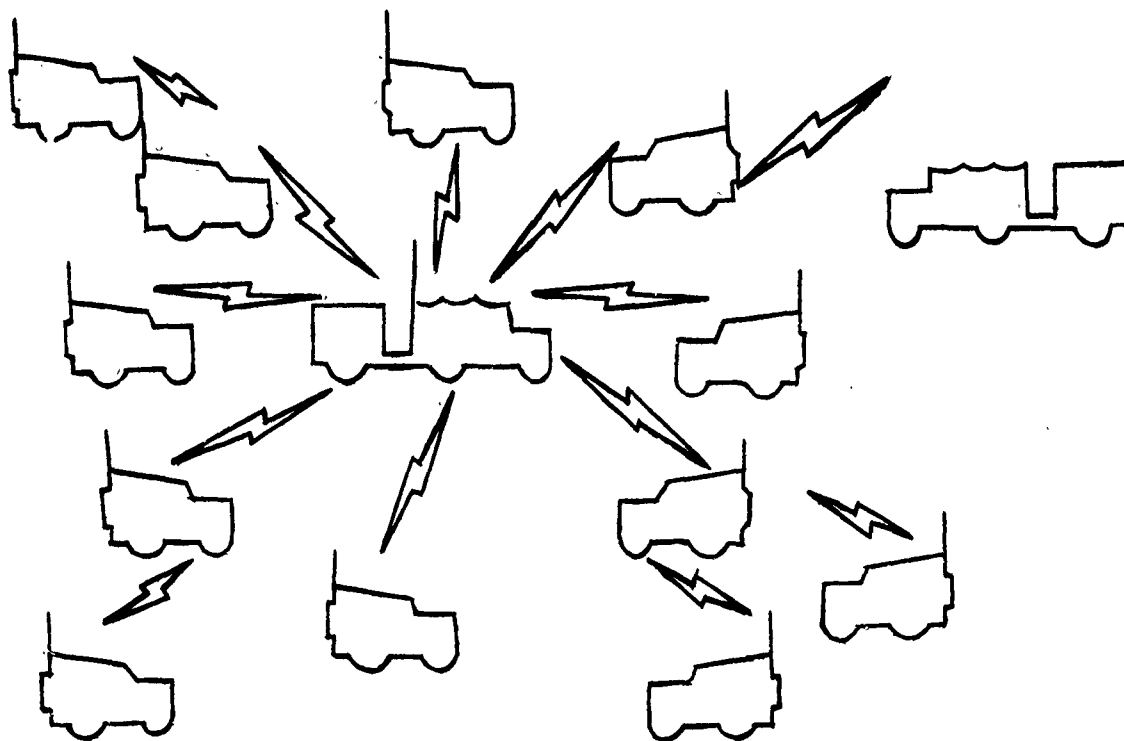


Figure 18. Concept of Radio Central System AN/USC-3.

This equipment was tested during the summer of 1962 by the U. S. Army Airborne, Electronics, and Special Warfare Board at Fort Bragg, and used during exercise SWIFT STRIKE in August of that year. These tests successfully proved the feasibility of the radio central concept for tactical communication. More systems are now being procured for further testing in May 1964 in exercise COULEE CREST.

In this artist's concept of the equipment in the field, note that subscriber equipment is mounted in ground vehicles. Subscriber sets can also be mounted in tracked vehicles and aircraft. Future development may also provide that the switching central itself be mounted in aircraft.

Current equipment provides reliable operation up to 16 kilometers from the radio central. (Figure 19)



Figure 19. Radio Central AN/MS-37.

This is a view of the AN/MS-37, the Communication Central part of the AN/USC-3. It is installed in a 3/4-ton shelter. This equipment can operate while moving, using a different type antenna, however, the range is reduced. The voice channels can be used as trunks or loops to 12 subscribers. Both private line and conference calls can be accommodated. If the central

(Figure 21) This is the control panel used by the operator. All controls are readily available to the operator. We believe the system to be a major step forward in Infantry Communications. It is one solution to the problem of telephone type communications from brigade to battalion presently limited to field wire lines which are slow to install and difficult to maintain.

(Figure 22) Many of you have used the MX-306 or "donut roll" to obtain continuous communication. This Dispenser, when filled, contains 800 meters of wire and weighs 25 pounds.

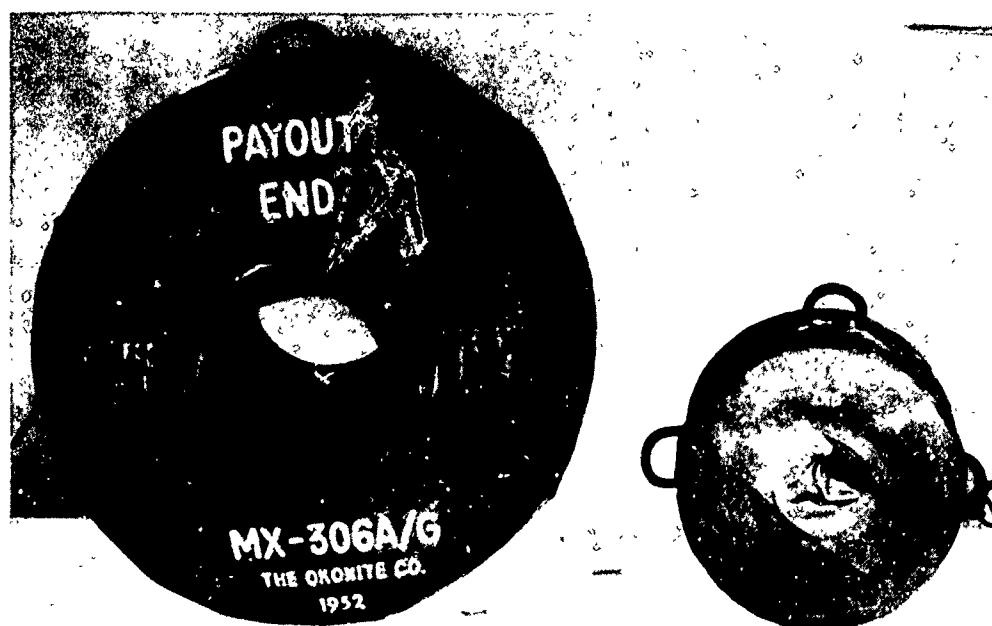


Figure 22. Field Wire WD-1 In MX-306 and Canadian Assault Wire.

The Canadian Army has developed this field wire that the United States Army has been testing and considering for adoption. The wire is not intended to replace all present field wire, but if adopted, will find a great use at platoon and company level. The dispenser contains 800 meters of wire, yet it weighs only 12 pounds as compared with 25 pounds for the donut.

The use of this wire would be on a one-time basis and it normally would not be recovered. Splicing of the wire is quite simple since you need only to tie the broken conductors, strip a little insulation with your fingernails, and twist the exposed conductors together. This is another step forward in lightening the Infantryman's load, yet still meeting his needs.

Although not a new item of equipment in the Infantry, the Radar Set AN/PPS-4 is one item of equipment that many infantrymen have not had the opportunity to see. (Figure 23)

This radar set is the AN/PPS-4 radar organic to the Infantry Rifle Company. This set has the capability of detecting movement of personnel to a distance of 1,500 meters and movement of vehicles to a distance of 8,000 meters. There are two of these short range radar sets organic to each rifle company, whereas under ROCID they were in the radar section of the combat support company. This item of equipment is capable of being transported on backpack by using a three-man team.

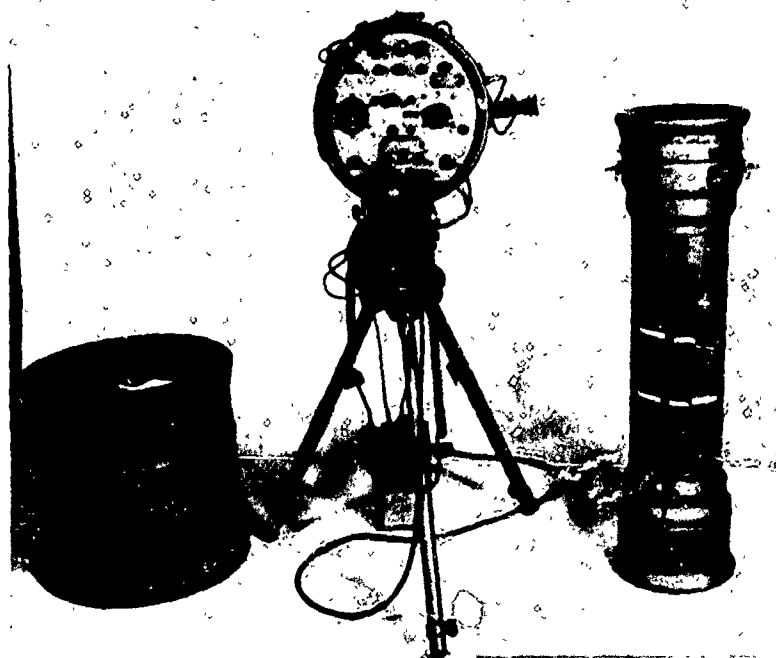


Figure 23. Short Range Radar AN/PPS-4.

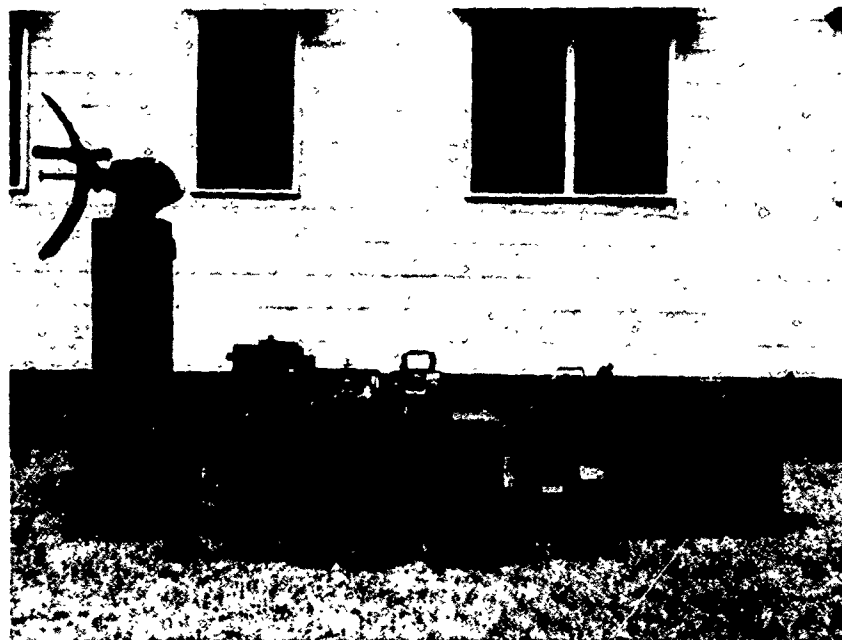


Figure 24. Medium Range Radar AN/TPS-33.

The battalion commander has within the radar section of the battalion, two radar sets, AN/TPS-33, to be used as required within the battalion sector. (Figure 24)

This is only the antenna portion of the radar that the Battalion Commander employs to detect enemy movement at extended distances. This set, the AN/TPS-33, has the capability of detecting movement of personnel to a distance of 3,000 meters and movement of vehicles to a distance of 18,280 meters. These items act as extensions of the battalion's eyes during the period of darkness and reduced visibility. The section leader of the Radar Section has a radio for entering the battalion command net in the event the need arises.

Being service tested at this time in the Radar Set, PPS-5. This set is designed to replace the PPS-4. (Figure 25)



Figure 25. Developmental Short Range Radar AN/PPS-5.

One of the advantages of using this radar set is the fact that a power converter is provided to permit operations with external 24-volt sources, to include vehicular power systems. Other advantages are: it is lighter than the PPS-4, and it provides a visual presentation as well as an audio signal.

We have discussed with you the current communication systems and equipment within Infantry units from the platoon through the brigade and its entries into the Division Area System. We have also compared the present radios with radios that are soon to be standard throughout the Army. We have further pointed out some of the current trends and concepts that are being worked on for future communication needs within the Infantry.

We have limited our discussion primarily to electronic communications equipment with the exception of ground surveillance radar. However, the field of noncommunications electronics is one of extreme importance to the commander and should always be taken into consideration. The Army Security Agency and Signal Corps Electronic Warfare units have extensive noncommunications-electronic support capabilities available to the commander which should be exploited to the fullest.

CHAPTER 4

WEAPONS DEPARTMENT PRESENTATIONS

SECTION I. BASIC MARKSMANSHIP TRAINING

CAPTAIN THOMAS W. BELD

Instructor, Small Arms Committee, Weapons Department

The purpose of this orientation is to familiarize you with the recent developments in rifle marksmanship. This discussion will include those courses designed specifically for Basic Combat Training, Annual Qualification, POR, and the facilities required to conduct these courses.

Early in 1961, a Rifle Marksmanship Evaluation Board was convened here at Fort Benning. Its purpose was to study the various marksmanship courses that were then in effect, determine whether or not these courses satisfied the requirements for training our individual soldiers, and if not, to recommend new courses that would satisfy the training requirements. The recommendations made by the Rifle Marksmanship Evaluation Board constituted a completely new approach to Rifle Marksmanship, in that it provided a course of instruction for every conceivable situation and for every marksmanship training need. As a result, the Rifle Marksmanship Program is not one course of fire, but many courses designed to produce a combat effective rifleman.

With this background in mind, let us now discuss the standard courses of fire that were developed to accomplish the marksmanship mission (Figure 1). Here we have depicted those courses that were designed to support the One Army Concept - both active and reserve units.

STANDARD COURSES - ACTIVE ARMY		
1. BASIC RIFLE MARKSMANSHIP COURSE		75 HOURS
(PRESENTED DURING BCT UNDER ATP 21-114)		
2. COMBAT READINESS MARKSMANSHIP PROFICIENCY		
STANDARD COURSE - A1		36 HOURS
(ANNUAL QUAL & POR - PERSONNEL 1-15 YRS SVC)		
3. COMBAT READINESS MARKSMANSHIP PROFICIENCY		
STANDARD COURSE - A2		18 HOURS
(ANNUAL QUAL & POR - PERSONNEL OVER 15 YRS SVC)		
STANDARD COURSE - RESERVE COMPONENTS		
4. PRE-MOBILIZATION READINESS MARKSMANSHIP		
PROFICIENCY STANDARD COURSE - C		16 HOURS
A. CONDUCTED ON 25-METER OR 1000-INCH RANGE.		
B. TRANSFER OF SKILLS PROVIDED BY SPECIAL TARGET.		

Figure 1. Standard Courses - Active Army

The first listed is the Basic Rifle Marksmanship Course. This will replace our present course that all of you know as Trainfire I.

Next, we find the Combat Readiness Marksmanship Proficiency Course A1 and A2 for active Army units and the Pre-Mobilization Readiness Proficiency Course C for Reserve Components. Later, we will discuss these courses more in detail; however, one point to keep in mind is that all courses listed as Standard, are to be conducted on Trainfire Facilities. These facilities are the 25 Meter, Target Detection, Field Firing, and Record Ranges.

To understand these courses we must know the content of the Basic Rifle Marksmanship Course, as it is used as a foundation for all other marksmanship courses.

This figure (Figure 2) shows the Basic Rifle Marksmanship Course, which consists of 75 hours and replaces the old 78 hour Trainfire I Course. It is basically the same course with a few changes and is presented only during Basic Combat Training.

BASIC RIFLE MARKSMANSHIP COURSE	
ORIENTATION	1 HOUR
MECHANICAL TRAINING	4 HOURS
PREPARATORY MARKSMANSHIP	32 HOURS
FIELD FIRING	16 HOURS
TARGET DETECTION	14 HOURS
RECORD FIRING	8 HOURS
	<hr/>
TOTAL	75 HOURS
NOTE - 8 HOURS INDIVIDUAL NIGHT FIRING FOLLOWS RECORD FIRING	

Figure 2. Basic Rifle Marksmanship Course

The first period of instruction is the orientation, conducted in a classroom. During this period the soldier learns the history and development of military rifles. It emphasizes the importance of the relationship which must exist between the soldier and his rifle, and that basically, all soldiers are Infantrymen.

Following the orientation, the soldier learns the mechanics of his rifle. He learns all of the factors he must know in order to maintain and care for his weapon properly.

Preparatory Marksmanship Training is conducted on a 25-meter range. This range has foxholes and stumps to permit instruction in firing from supported positions. The soldier learns that firing the rifle is an integrated act, consisting of aiming and the steady hold factors. All of you are familiar with aiming procedures and steady hold factors. These steady hold factors are emphasized in teaching the soldier to fire from supported and unsupported positions.

The five unsupported positions that he learns are the prone, sitting, squatting, kneeling, and standing. The supported positions are the prone supported, using sandbags; the foxhole; and kneeling supported at the stumps.

During the firing exercises, the soldier will use a caliber .22 rifle with the same configuration and weight as the M14 rifle. This will minimize fear of recoil permitting the soldier to concentrate on mastering marksmanship fundamentals. This is a new concept in contrast to the old Trainfire course of instruction. An added advantage of using the .22 rifle, is that the soldier will be able to fire more ammunition at a considerably reduced cost.

In the latter stages of Preparatory Marksmanship, the soldier begins his training with the service rifle and obtains his 250-meter battlesight zero. He now must learn to engage targets at greater and lesser ranges with this one sight setting on his rifle.

You will recall that the field firing range is constructed on flat, open terrain and that targets are located at 75, 175, and 300 meters. The target used here is the electrically operated pop-up target. This target kills when struck by a round. The soldier learns to engage these targets by application of "hold off." This technique is applied from stationary positions and while advancing toward his target. Firing exercises are conducted with time limits for each target exposure.

Concurrently with Preparatory Marksmanship, Field Firing, and Record Firing, Target Detection instruction is presented. This training is conducted on terrain which has been left primarily in its natural state. The soldier learns to detect, mark the location, and estimate the range to single and multiple stationary targets, moving targets, and sound targets. Live target men are used to add realism to the instruction.

The final periods of instruction are conducted on the Record Firing range. Here the soldier is tested in his ability to detect and engage single and multiple targets in their natural surrounding.

Record Firing is conducted in two phases. During Record I, the soldier must engage single stationary targets. He will have a total of 56 target exposures and one round for each target. A target will appear at ranges from 50 to 350 meters and the soldier will have 5 seconds for targets less than 200 meters distant and 10 seconds for targets beyond that range.

During Record II, the soldier will be presented with multiple target exposures. Up to 3 targets will appear simultaneously, requiring the soldier to shift his point of aim rapidly within the target exposure time. He has a total of 28 target exposures and the soldier will have 40 rounds of ammunition, thus enabling him to fire twice on some targets, but not all of them.

Scoring is based on the number of hits in Record I and Record II. The total is used to determine his qualification as an expert, sharpshooter or marksman.

The Basic Rifle Marksmanship Course is designed to build the Soldier's confidence and desire to detect and hit combat targets.

Following this course of instruction, the soldier will receive 8 hours of Individual Night Firing consisting of four periods of instruction covering Night Vision, Daytime Instruction Firing, Night Practice, and Night Record Firing.

The course of instruction just discussed, will be presented only during Basic Combat Training under Army Training Program 21-114.

The remaining courses on Figure 1 follow this same sequence of instruction, incorporating the principles taught in the Basic Rifle Marksmanship Course.

The 36-hour course is used for annual qualification and POR firing. It is fired by personnel who have from 1 - 15 years of service.

The 18-hour course is also used for annual qualification and POR firing but is fired by those who have more than 15 years of service.

These three standard courses will be followed by all active Army personnel.

The 16-hour course is designed for use by Reserve Components. Firing is conducted on a 25-meter or 1000-inch range. A specially designed target incorporates Trainfire concepts by spacing and sizing of miniature silhouette targets on a larger white background. This target facilitates the transfer of skills in later marksmanship courses.

These, then, are the Standard Courses developed and the courses to be conducted on Trainfire I Facilities.

Realizing that Trainfire Facilities have not been constructed at all Army installations, the Evaluation Board developed Alternate Courses that are to be conducted on Known Distance complexes. (Figure 3)

ALTERNATE COURSES - ACTIVE ARMY	
1. ALTERNATE BASIC RIFLE MARKSMANSHIP COURSE (PRESENTED DURING BCT UNDER ATP 21-114)	81 HOURS
2. COMBAT READINESS MARKSMANSHIP PROFICIENCY MODIFIED KD COURSE - A1 (ANNUAL QUAL & POR - PERSONNEL 1-15 YRS SVC)	36 HOURS
3. COMBAT READINESS MARKSMANSHIP PROFICIENCY MODIFIED KD COURSE - A2 (ANNUAL QUAL & POR - PERSONNEL OVER 15 YRS SVC)	18 HOURS
ALTERNATE COURSE - RESERVE COMPONENTS	
4. PRE-MOBILIZATION READINESS MARKSMANSHIP PROFICIENCY - KD COURSE - C (ALL FIRING CONDUCTED ON A MODIFIED KD RANGE)	20 HOURS

Figure 3. Alternate Courses - Active Army

The Alternate Courses (listed in Figure 3) have been developed. Please note that each one corresponds directly with a standard course already discussed. In order to conduct these alternate courses the following known distance ranges are required:

1. A 1000-inch range for teaching preparatory marksmanship.
2. A known distance range, with a 100, a 200, and a 300 yard line is modified by using a silhouette target in the target frame, instead of the old bull's-eye target. This range is used for field firing exercises and record firing.
3. A combat positions range, similar to the old transition range, is used for teaching supported firing positions and record firing.

A combined score from known distance record field firing and combat positions record firing is used to determine the soldier's qualification.

Keep in mind that these alternate courses are used as a substitute for the standard courses. Where possible, all personnel should receive the standard course of instruction.

The entire Rifle Marksmanship Program, which encompasses all courses of instruction is outlined in detail in a new Field Manual 23-71, entitled Rifle Marksmanship.

Further, this manual is supported by Army Subject Schedule 23-31, same title.

The courses we have discussed were developed to standardize rifle marksmanship training throughout the Army and will produce a combat effective rifleman.

SECTION II. QUICK FIRE INSTINCT SHOOTING TRAINING PROGRAM

CAPTAIN THOMAS R. BLOCK

Instructor, Small Arms Committee, Weapons Department

Recent reports from Vietnam indicate that in the jungle, man is either "quick" or he is "dead."

Under our present program of rifle marksmanship, the individual soldier receives instruction which trains him to engage targets at ranges varying from 50 to 350 meters, using aimed fire. This is an important skill and will always be necessary. In addition to engaging long-range targets, the soldier must also be trained to react instinctively in a "kill or be killed" situation.

The Weapons Department felt that a definite need existed to teach our soldiers how to engage close-in surprise targets - a skill which was not being developed under our present marksmanship program. The Weapons Department, therefore, conducted a series of tests early this year to develop "Quick Fire" techniques.

Just what is "Quick Fire"? What do we mean by this phrase? "Quick Fire" is the rapid instinctive engagement of close-in surprise targets which are exposed for very brief periods of time. To effectively engage those fleeting targets, it was felt that special techniques had to be developed which would enable our Soldiers to emerge victorious from a Quick Fire situation. These techniques included: the best method to carry the weapon; the proper body position for the firer; and the proper head-eye, target-weapon relationship. The test was designed to provide this information.

In the tests conducted, only targets ranging from 15 to 80 meters were used, with an exposure time of 1 to 5 seconds. Five firing positions were considered; two from the shoulder and three from off-shoulder firing positions. All tests were conducted with the M14; however, the techniques are applicable to other shoulder fired weapons. These positions were the shoulder aimed (Figure 4) and shoulder pointing (Figure 5) (note the firer has both eyes open and is not using the sights); the hip firing position (Figure 6); underarm firing position (Figure 7); and the stomach firing position (Figure 8). Test results showed that the two shoulder firing positions gave roughly a 50% greater hit probability than the off shoulder firing positions. Of the two shoulder firing positions, pointing type aim was the most accurate in the Quick Fire situation.

During the conduct of the firing, the Weapons Department also was concerned with finding the best carrying position for the weapon and the proper body position for the firer, which would enable the soldier to quickly and accurately engage these close-in surprise targets.

Test results so far have proven that the semi-hunter ready position is the most suitable for carrying the weapon. In a tactical situation, when enemy contact is eminent, the troops should be alert, and therefore, the semi-hunter ready position would be the most appropriate.

The firer must have a good body position facing generally toward the target in a boxer type crouch. A good position is necessary for the firer to quickly recover for a second or third shot if needed, and to shift to new targets in the vicinity of the original target. In addition to a good body position, the firer must also be able to smoothly and quickly shoulder the weapon. In doing this, it was found that the best technique to use is to thrust the weapon out, pointing at the target. The weapon then becomes an extension of the pointing arm. The firer then draws the weapon back into his shoulder. At the same time the firer is shouldering the weapon, he is instinctively aligning it with the target. He can accomplish this because both eyes are open and he is concentrating only on the target (Figure 5). The firer uses the same instinct that everyone uses when

pointing at a distant object with the finger. It's also the same technique that bird hunters use with the shotgun. These actions are the basic techniques to use in a "Quick Fire" situation and are all accomplished simultaneously by the firer.

The Weapons Department advocates having both eyes open concentrating on the target, pointing the weapon and not using the sights. This is a departure from our present marksmanship program; however, keeping both eyes open gives the firer a greater field of vision and it was found that at close ranges the firer could align his weapon effectively without the use of his sights.

These are the basic techniques of Quick Fire. By using them our soldiers will be able to quickly and accurately engage close-in targets. Combat experiences have shown that the greatest percentage of small arms casualties were inflicted at comparatively short ranges. It is the close-in target that poses the greatest threat to the Infantryman. This is the target that must be engaged first and killed. In this situation the Infantryman is either quick or dead!

Beginning in FY 64, Quick Fire will be implemented into the programs of instruction at the Infantry School.

Through this beginning, the Weapons Department will be able to give impetus to the improvement and perfection of a Quick Fire program which will eventually supplement our current Rifle Marksmanship Training Program.



Figure 4. Shoulder Aimed Firing Position



Figure 5. Shoulder Pointing Firing Position



Figure 6. Hip Firing Position



Figure 7. Underarm Firing Position



Figure 8. Stomach Firing Position

SECTION III. AUTOMATIC RIFLE ORIENTATION

CAPTAIN JOHN R. MILEY

Instructor, Small Arms Committee, Weapons Department

The automatic firepower of today's Infantry rifle squad is provided by the M14 Rifle (Modified). (Figure 9). There are two of these weapons in each rifle squad - eighteen in the rifle company. This weapon is identical to the standard M14 rifle except for the mounted selector and the bipod group. The selector gives this weapon a semiautomatic or automatic firing capability. The bipod provides added stability for automatic and long range semiautomatic fires.

The M14 (Modified) weighs slightly over 13 pounds with magazine fully loaded. The magazine holds a maximum of 20 standard NATO 7.62mm cartridges. The automatic rifleman armed with this weapon carries as his basic load 260 rounds of ammunition - 13 magazines of 20 rounds. This weapon is capable of delivering effective automatic fire on combat targets out to 460 meters. Effective semiautomatic fire can be delivered on point targets at any range out to 700 meters due to the added stability provided by the bipod.

The M14 Rifle (Modified) gives us a number of advantages over the Browning Automatic Rifle: it is about eight pounds lighter than the BAR; less time is required to train personnel in the use of this weapon due to the similarities with the M14 rifle; it fires a standard NATO cartridge; its parts are interchangeable with those of our service rifle; and finally, it costs about one hundred dollars less to produce this rifle than it did the BAR.

However, because of the erratic nature of automatic fire delivered by this weapon, it is generally considered as an unsuitable replacement for the Browning Automatic Rifle. The large dispersion of automatic fire delivered by the M14 (Modified) is caused by a combination of factors: its high cyclic rate of fire; its light weight and stock configuration; and its severe recoil. To overcome these undesirable characteristics, the United States Army Infantry Board here at Fort Benning, has developed a modification of this weapon which is currently referred to as the United States Army Infantry Board (USAIB), M14 Rifle (Modified). (Figure 10).

Mechanically, the weapon has remained unchanged; however, four major improvements have been made to it, resulting in a superior automatic rifle. First, a straight line stock has been added to reduce vertical muzzle displacement. Second, front and rear hand grips have been added to the stock to enable the firer to better control his weapon by exerting increased pressure on the bipod legs. Third, a rubber, shotgun-type recoil pad has been added to the butt of the stock to reduce the effects of recoil on the firer. Finally, a compensator has been added to the muzzle which is designed to reduce some of the recoil, and to compensate for lateral muzzle displacement by controlling the escape of burning gases. These modifications have added less than a pound to the weight of the weapon, but have greatly increased its capability to deliver accurate automatic fire. The Department of Army has requested funds to purchase 8,500 of these weapons in FY 64 to replace the standard M14 (Modified).

The most recent addition to our arsenal of individual weapons for the Infantryman is the AR-15 Rifle. (Figure 11). It is a Caliber .223 gas operated, air cooled, magazine fed, semi- or fully automatic rifle. This weapon features an entirely new gas system, a receiver of light weight aluminum alloys, and a stock and hand guard of synthetic materials. The weapon weighs approximately six pounds with magazine of 20 rounds. The maximum effective range of the AR-15 is 460 meters. The weapon may be set for semiautomatic or automatic fire by rotating the selector switch on the left of the receiver. Each weapon is issued with a lightweight, detachable bipod which can be mounted or detached rapidly. The flash suppressor serves as a grenade launcher and as a front mount for the bayonet. Extensive testing has recently been conducted on this weapon here at Fort Benning by the Infantry Board. At present, consideration is being given to adopting this weapon for use by special type units.



Figure 9. M14 Rifle (Modified).



Figure 10. USAIB M14 Rifle (Modified).

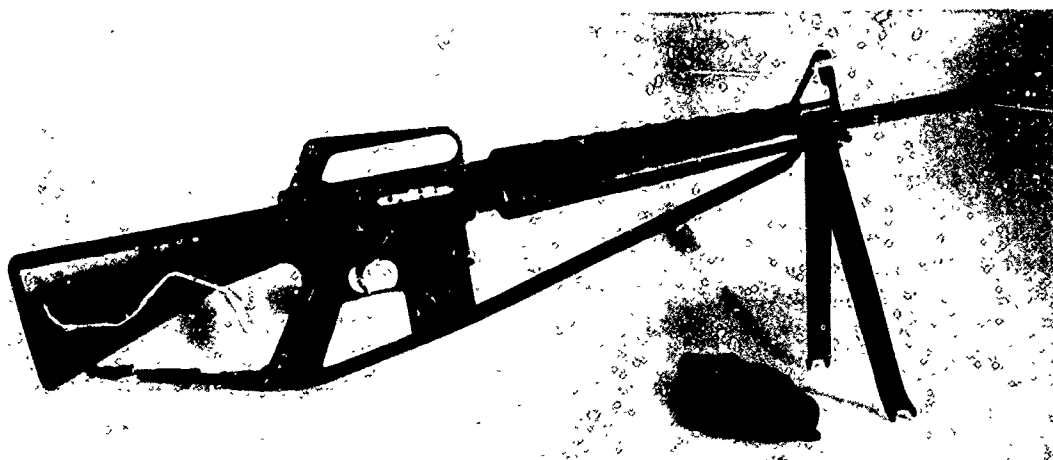


Figure 11. AR-15 Rifle.

SECTION IV. ANTITANK WEAPONS AND MINES

CAPTAIN RICHARD F. KOLASHESKI
Instructor, Antitank/Missile Committee, Weapons Department

M21 ANTITANK MINE

Mines used in their primary role as obstacles form a part of the overall coordinated plan to delay, disorganize, and canalize the advance of the enemy. They are capable of inflicting heavy losses on personnel and equipment, and their psychological effect takes advantage of man's inherent fear of the unknown.

The latest standard antitank mine is the M21 "tank killer" mine (Figure 12). The M21 derives its effectiveness against armor by propelling a steel plate with sufficient force to penetrate the belly of a tank.

The M21 is employed primarily with an extension rod attached to the fuze. When this extension rod is tilted in excess of 19 degrees, the mine is detonated after a .15 second delay. This delay allows the victim tank to position itself over the mine before detonation. The M21 may also be employed for pressure operation without the extension rod. A minimum force of 290 pounds on the pressure ring will detonate the mine.

The M21 weighs eighteen pounds and contains eleven pounds of H-6 explosive. Appendix VI, FM 20-32, is the current publication containing information on the M21 mine. In addition, a training film is available for training purposes. The classification of this mine is standard "A", indicating production and availability to troop units at this time.

M18A1 CLAYMORE

A lethal device which has been added to our arsenal of antipersonnel weapons is the M18A1 Claymore (Figure 13). Designed for employment against enemy massed attacks, the Claymore is a small, lightweight, directional, one-shot weapon capable of propelling 700 small steel spheres into a fan shaped killing zone 60 degrees in width, at a height of two meters and at a range of 50 meters. The weapon is moderately effective to a range of 100 meters and dangerous out to 250 meters. The backblast area is 16 meters to the rear and sides.

The weapon is issued in a bandoleer which contains the Claymore, an electrical firing device, an electric blasting cap, and 100 feet of firing wire (Figure 14). Six bandoleers, with one circuit tester, are issued in a box weighing 53 pounds.

The Claymore can be employed either as a mine or an individually fired weapon.

When employed as a weapon it is mounted on its unfolded legs and aimed at a one meter high stake placed approximately 50 meters to the front in the center of the area to be covered. We aim the weapon using the sight mounted on top. Once emplaced, the weapon is armed by placing the blasting cap into one of the two detonator wells. The circuit is tested and the wires attached to the firing device. The weapon, so emplaced, can be fired at the option of the operator. If not used, the weapon can be disarmed by using reverse procedure.

When employed with a tripwire or boobytrap device, the Claymore is treated as a mine and must be authorized, marked, reported, and recorded in accordance with FM 20-32, Land Mine Warfare.

The Claymore device is presently in use in Vietnam. The only current Department of the Army publications on the device are Training Circular 7-3 and TF 7-3180. The Claymore is

classified as a standard "A" item. There are 198 Claymore weapons in the basic load of the ROAD Infantry battalion.

M72 ANTITANK ROCKET

The Rocket, HE, 66mm, AT, M72 (Figure 15) is unique in that the rocket is fired from its own expendable launcher which, in its closed position, serves as a watertight packing container for the enclosed 66mm rocket.

The complete weapon, rocket and tube, weighs 4.6 pounds and is issued to the individual soldier in addition to his basic weapon in a manner similar to grenades. One hundred and five is the recommended basic load per rifle company.

The simplicity of operation of the M72, as indicated by the brief instructions pasted on the tube, makes gunner training easy and short.

To place the M72 into action, the firer removes the rear cover and allows the sling to fall free. He then grasps the bail handle on the rear of the inner tube and extends the tube to its launch or firing position. He next removes the rear safety pin, pulls forward on the trigger safety release, aims, and fires. Once the rocket has been fired, the tube is discarded.

The rocket is fin stabilized in flight and the shaped charge warhead will defeat the armor of any known tank. The maximum practical range of the M72 is 325 meters, based on the graduation of the front sight; the maximum effective range is expected to be less, based on tests completed to date.

The M72 is currently under production and final confirmatory tests are to be conducted on the production model in the near future.

The only Department of the Army publication on the M72 is the Training Circular 23-7. A field manual will be published by the Infantry School upon receipt of production models.

90MM RIFLE, M67

The 90mm rifle, M67 (Figure 16) was designed to replace the crew served 3.5 inch rocket launcher and is now being phased into the active army. Under the ROAD organization, two of these weapons are located in the weapons squad of each rifle platoon, a total of six per rifle company. There are two openings in the breechblock to allow for escape of expanding gases, thereby permitting recoilless operation. Due to the absence of heavy recoil reducing parts, the total weight of the 90mm rifle is thirty-five pounds. The 90mm rifle is serviced by a crew of two men and is expected to have a maximum effective range of 450 meters.

Manufacture of service ammunition at the present time is limited to HEAT; however, a target practice round has been developed and is undergoing tests. The round weighs nine-and-one-quarter pounds and its shaped charge warhead will penetrate the armor of any known tank. Because spin stabilization lowers the effectiveness of the shaped charge warhead, the 90mm HEAT round is fin stabilized in flight. An electric crystal in the fuze of the warhead insures detonation regardless of its angle of impact. A subcaliber device has been developed by the United States Army Infantry School for this weapon. This device is currently undergoing tests by the Army Materiel Command at Aberdeen, Maryland, and should be in the hands of troops sometime during FY 64. At the present time, Training Circular 23-5 and a technical manual are the only publications in circulation. A training film and a field manual are programmed for production during FY 64.

ENTAC ANTITANK GUIDED MISSILE

The ENTAC Antitank Guided Missile is now being phased into the active Army (Figure 17). It is a lightweight, remote controlled, wire-guided missile which is propelled by a two-stage solid propellant rocket motor. The two major components of the ENTAC are the warhead and the finned body. Located in the rear of the missile is a flare which assists the gunner in tracking the missile to the target. The in-flight weight of the missile is 26.7 pounds; however, it is never separated from its 10.8 pound launching container until fired. Total missile and launcher weight is 37.5 pounds. This missile is capable of effectively delivering its 130mm warhead to a maximum practical range of 2000 meters and a minimum practical range of 400 meters. Missile speed is 80 meters per second or 262 feet per second.

The gunner launches and guides the missile to the target using a guidance control unit. Once the missile is launched, the gunner brings it into alignment on the target by manipulating a vertical control stick which sends directional commands to the missile. A rearward movement on the stick generates an "up" command in the missile, forward a "down" command, and a left or right command directs the missile in a corresponding direction.

The ENTAC is located in the antitank platoon of the ROAD Infantry Battalion's Headquarters and Headquarters Company. The platoon consists of a platoon headquarters and three firing squads. The platoon headquarters consists of a platoon leader, platoon sergeant, and a radio-telephone/driver operator. Transportation is provided by a 1/4-ton truck with trailer and radio communication by an AN/VRC-18 radio when mounted, and an AN/PRC-10 radio for dismounted operations. Adequate wire means are also available.

Each of the three antitank squads is equipped with a 3/4-ton truck and a 1/4-ton launching vehicle. The 1/4-ton vehicle currently being tested mounts four missiles ready for firing in different directions. The gunner's seat and mounted guidance control unit can be rotated to correspond to the desired direction of fire. The launching vehicle also carries three resupply missiles. A 100 meter cable is mounted on the rear of the vehicle. This affords the gunner the capability of being offset to an observation point while launching missiles from the vehicle located in a defilade position.

The major problems with the guided missile system today are gunner selection and training. Further, gunner reaction in a combat environment is unknown. A high degree of hand-eye coordination and 20/20 uncorrected vision are requirements of students attending gunnery courses. Gunnery students are presently selected through a hand-eye coordination test administered at training centers prior to reporting to the gunnery course. Platoon packets are being trained here at Fort Benning for selected overseas units.

Training literature for the ENTAC missile system currently available is Training Circular 23-6 with Change 1 and the technical manuals which include operator, unit, field, and depot maintenance. Draft copies of the field manual are being sent to the field for review and comments. It is anticipated that the field manual should be printed and issued to the field in October or November 1963.

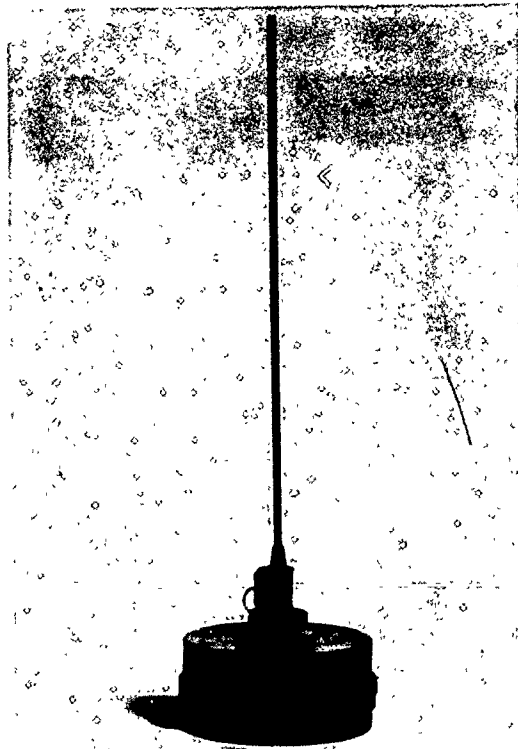


Figure 12. M21 Antitank Mine.

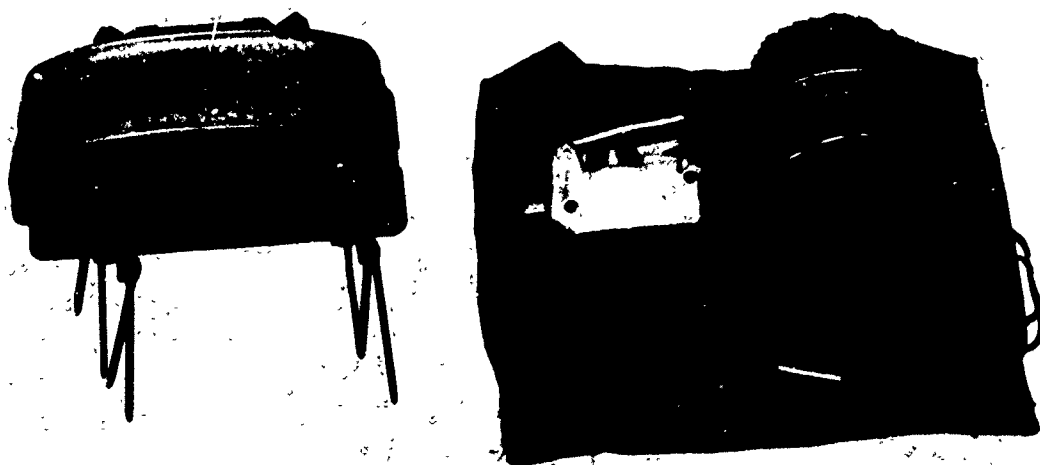


Figure 13. M18A1 Claymore Antipersonnel Weapon.

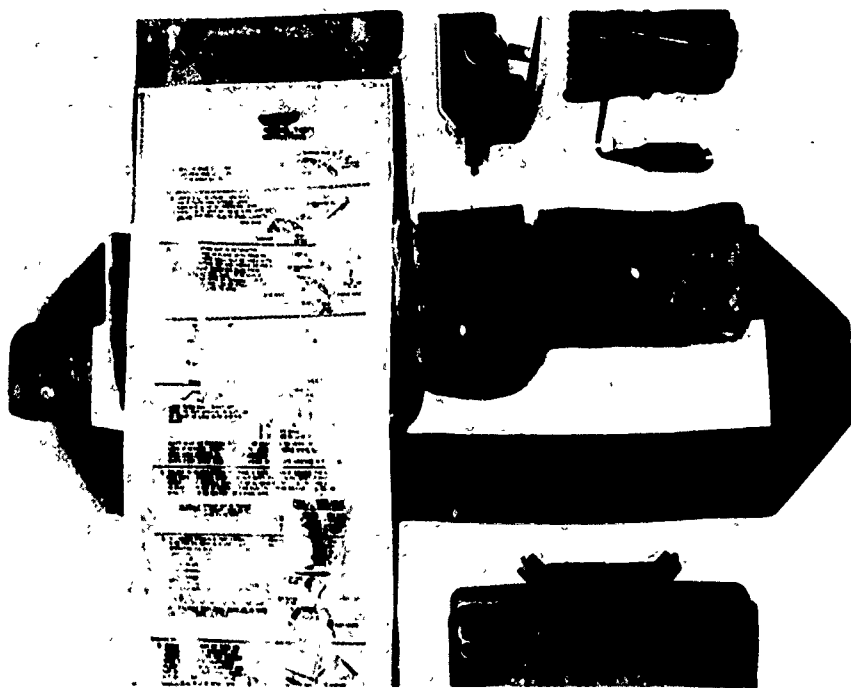


Figure 14. M18A1 Claymore with Accessories.

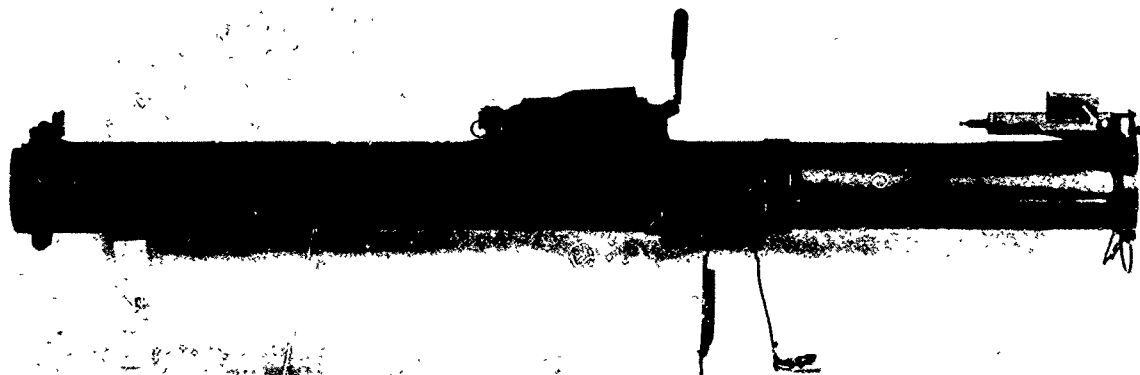


Figure 15. 66mm Light Antitank Weapon, M72.

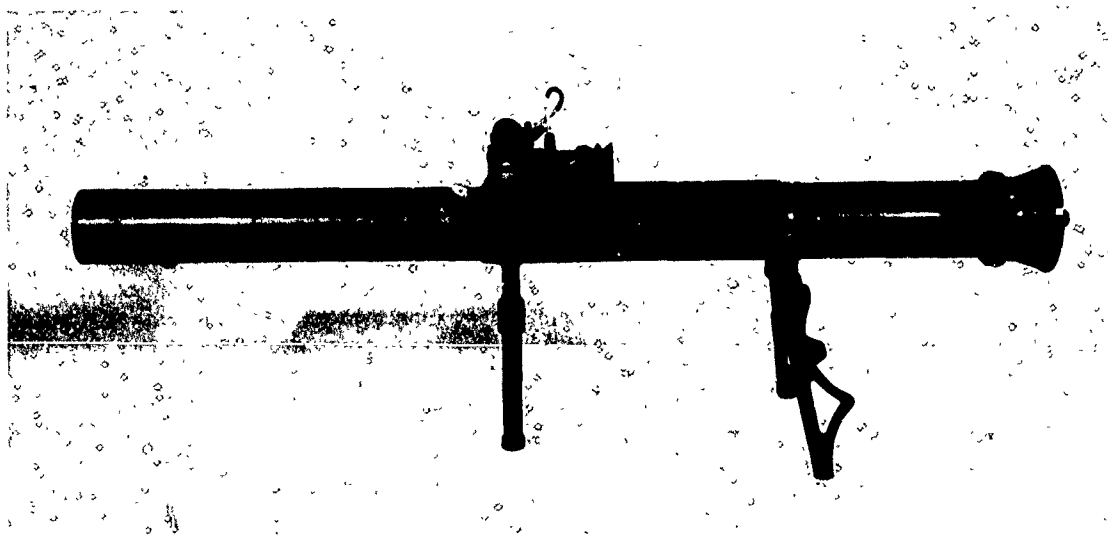


Figure 16. 90mm Rifle, M67.

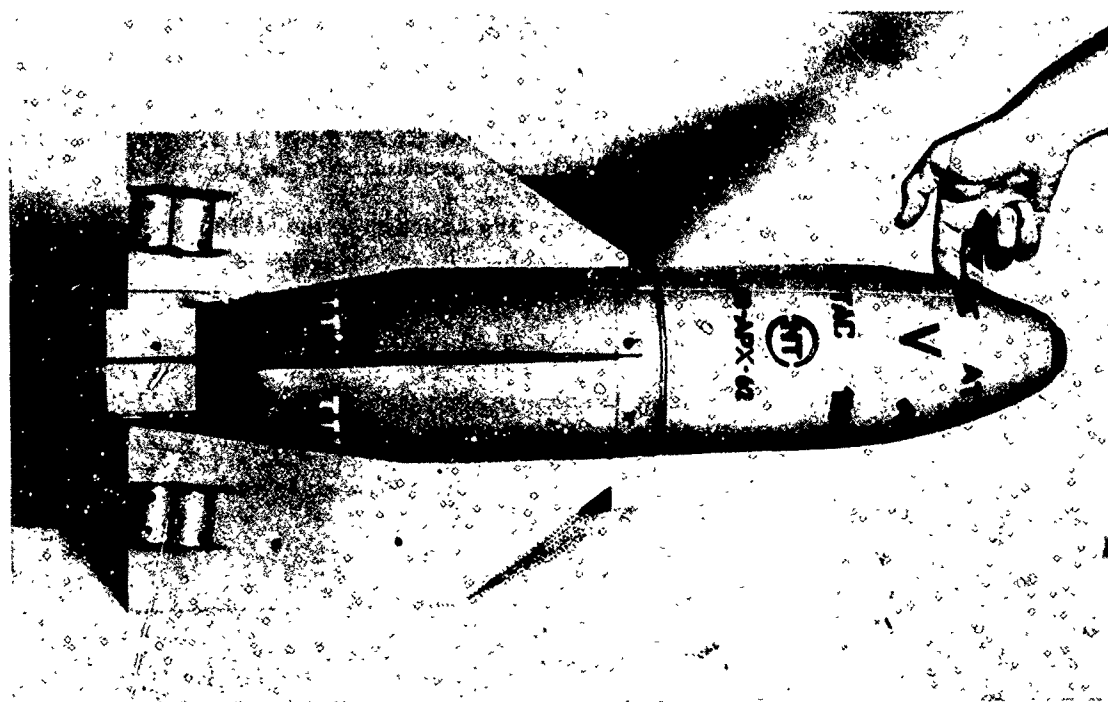


Figure 17. ENTAC, Antitank Guided Missile.

SECTION V. MAJOR CHANGES TO THE DAVY CROCKETT WEAPON SYSTEM

CAPTAIN EDWIN N. BUNIJ
Instructor, Mortar Committee, Weapons Department

As many of you will recall, we covered the Davy Crockett Weapon System in detail in the last Instructors' Conference. In this conference only the major changes to the weapon system will be discussed.

Testing of both delivery systems has been completed and the "X" designation has been dropped. The "X" designation indicates an experimental status. Only the nuclear projectile and the 37mm spotting gun and its ammunition will retain the "X" designation.

The major change to the delivery systems has been the addition of the 37mm spotting gun to the M29 heavy Davy Crockett. (Figure 18) Formerly, this weapon adjusted fire with a super-caliber high explosive projectile costing approximately one thousand dollars. Adjustment with this projectile discloses the weapon's position. The 37mm spotting gun will reduce the cost of adjustment to \$50 per round and will not disclose the weapon's location to the extent that the high explosive projectile did. Ammunition for the 37mm spotting gun is still under development and is not yet in the hands of troops. (Figure 19)

The 37mm spotting gun is fired by a lanyard because of the 12 inch recoil of the barrel. The spotting system is breech-loaded, manually operated and single shot. The spotting projectiles used with the 37mm gun are fin stabilized and contain a white phosphorous charge. The projectiles produce a column of white smoke upon impact. These projectiles come in two zones which match the respective propellant charges used to fire the supercaliber projectile. The zone I spotting projectile will fire to a range of 1,900 meters, whereas the zone II projectile will fire to 4,000 meters.

This heavy weapon is mounted on the M38A1D 1/4-ton truck which has been modified to carry the ammunition and components for two nuclear missions.

An adaption kit to facilitate mounting the heavy weapon on the new standard M151 (1/4-ton) truck is under development. The light weapon's adaption kit for the M151 1/4-ton truck has already passed the Infantry Board's test and will be in production in the near future.

The adaption kit for carrying the M29 heavy Davy Crockett in the M113 personnel carrier had to be changed because of the 37mm spotting gun. The new adaption kit has a slide out-tray (Figures 20 and 21) in which the heavy weapon is mounted.

The field manual for the Davy Crockett, FM 23-20, is being revised. It has been in the field for review and is in the last stages of editing prior to being sent to the Government Printing Office. This manual is more complete and up to date than the present FM 23-20, and covers all phases of Davy Crockett gunnery.

The preferred method of employment of the Davy Crockett weapon system is in the indirect fire role from the 1/4-ton vehicle.



Figure 18. 37mm Spotting Gun, Heavy Davy Crockett

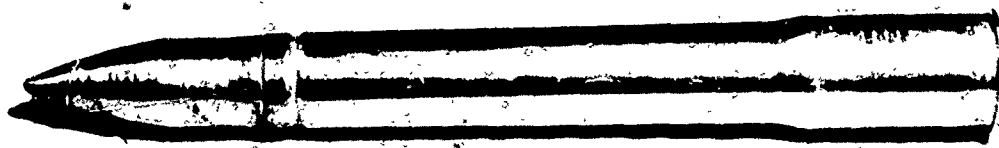


Figure 19. 37mm Spotting Gun Cartridge



Figure 20. Heavy Davy Crockett Adaption Kit for M113 APC



Figure 21. Slide Out Tray for Heavy Davy Crockett Adaption Kit

CHAPTER 5

AIRBORNE-AIR MOBILITY DEPARTMENT PRESENTATIONS

SECTION I. INTRODUCTION

CAPTAIN JAMES E. WITEK

Instructor, Airborne-Air Mobility Department

Gentlemen, on behalf of Col Madding, the Acting Department Director, I want to welcome you to the Airborne-Air Mobility Department of the United States Army Infantry School. This department has the responsibility for the parachute qualification of the American airborne soldier. This responsibility includes not only the technical training of parachutists here at Fort Benning, but also in the preparation of training literature and doctrine guiding parachute training in the airborne units.

The American airborne effort began here over 20 years ago with the organization and training of a test platoon of 48 enlisted and 3 officer members. These men became the first instructors of American airborne troops. From this small nucleus, the American airborne effort expanded rapidly, until by the end of World War II, the school had been vastly enlarged and the US Army could boast of 5 airborne divisions and 8 separate regiments. The combat accomplishments of these airborne units during World War II and the Korean Conflict are well known.

The capability of vertical envelopment by parachute is still a requirement for our armed forces. The presence of airborne units - the 82d and 101st Airborne Divisions within the continental United States, the Airborne Brigade of the 8th Infantry Division in Germany and the 503d Airborne Battle Group on Okinawa - indicates that the Department of the Army is taking maximum advantage of this unique capability of airborne forces.

SECTION II. AIRBORNE REQUIREMENTS

Airborne students must be volunteers. They volunteer from the Navy, Marine Corps, and Air Force as well as the Army. We also train military personnel from many Allied countries. In addition to being a volunteer the student must meet the prerequisites of the course which include being in good physical health and able to meet the minimum physical training requirements. Since 90% of our training is physically strenuous and involves bodily contact with the ground, there is some risk of injury to the poorly conditioned student. The course is of short duration and it is essential that students arrive in good physical condition. We do not have the time to fully condition them; we are only prepared to continue their conditioning to the peak required for jumping.

All students must be able to pass a physical fitness test. This test consists of the satisfactory performance of 4 test exercises and a road run. Observe the sawdust pit to your front where you will see demonstrated two repetitions each of the four test exercises. The student must perform at least:

- 6 CHINUPS
- 22 PUSHUPS
- 80 KNEE BENDERS within a two minute time period
- 20 AIRBORNE SITUPS

and finally he must complete a one mile road run within eight-and-one-half minutes.

Many students arrive for airborne training in poor physical condition. Even though most students receive one week of precourse conditioning, only 75 percent of the students pass the PT test each week. The students that fail the test repeat the conditioning phase of training until they pass or are dropped from the course.

The airborne student who is able to pass this entrance requirement must then participate in a total of fifteen hours of physical training. This training takes place during the first period of each training day and consists of eight exercises, including the four just demonstrated. During the course the student will progress from six to ten repetitions each of the eight exercises.

These exercises are designed to condition all of the major muscle groups of the body and are supplemented by a daily road run, which progresses from nine to thirty minutes of actual running time. This constitutes the physical training portion of the Airborne Course. A physical training record is kept on each student and he must demonstrate the proper degree of physical fitness before he is allowed to continue the course.

When the student first arrives at Fort Benning and prior to entry in the Airborne Course, he receives a Precourse Conditioning Phase of training. In addition to his initial processing, the student is physically and mentally prepared to begin the Airborne Course. He is taught how to wear the T-10 parachute assembly, how to make a parachute landing fall and how to exit from a mock aircraft. He also makes at least one exit from the 34-foot tower. The Precourse Conditioning phase of training was initiated in September 1962.

During the first week of training, the Ground Training Phase, the student receives intensive training on the basic fundamentals of military parachuting - how to exit from an aircraft and how to land safely. During the second week, the Tower Training Phase, we continue to emphasize the fundamentals of military parachuting and with the aid of the 250-foot free towers, teach the student how to control his parachute during descent. During the third and final week, or Jump Training Phase, the student is primarily concerned with making five satisfactory, qualifying jumps from an aircraft in flight. Having accomplished this he is then awarded the Parachutist Qualification Badge.

All training and apparatus of the Airborne Course is designed to teach one or more of the five basic jump techniques. Each of these techniques apply to a definite phase of military parachuting and when all of them are properly executed, will insure a safe parachute jump. These techniques are: First, the execution of the nine jump commands, which control the actions of the jumper inside the aircraft before exit. Second, control of the body from the moment the jumper leaves the door of the aircraft until he receives his opening shock, created by the inflation of the parachute canopy. Third, control of the parachute during descent. Fourth, making contact with the ground, or the execution of the parachute landing fall. The fifth and final technique that the student must master is the control of the parachute after landing.

Before the student actually enters into training, he is given an orientation on the piece of equipment in which he has the greatest interest - the parachute. I invite your attention to your right front to the small mock door. "Stand in the door, GO". As soon as the jumper reaches the end of his fifteen foot static line, the weight of his falling body breaks an 80-pound cotton tape, allowing the deployment bag to fall free. Two connector link ties are then broken and the suspension lines are pulled from the deployment bag. An additional 80-pound cotton tape is then broken and the canopy is pulled from the deployment bag, skirt first. At this time the jumper is still attached to the aircraft. As soon as the jumper receives his opening shock, he immediately checks his canopy for a malfunction. A malfunction is any discrepancy in the deployment or inflation of the canopy that will increase the jumpers rate of descent. Should the jumper have a malfunction, he would immediately activate his reserve. In order to do this, he snaps back into a good tight body position, places the left forearm and hand across the front of the reserve parachute and activates the reserve by pulling the ripcord grip. The jumper will then grasp the canopy in both hands and throw it out in the direction the wind is blowing. As the canopy clears the pack tray the jumper holds the skirt and shakes it vigorously. This will help the canopy to inflate more rapidly. As soon as the canopy starts to inflate, the jumper will release the skirt and feed out any suspension lines left stowed in the pack tray. You will notice that in contrast to the T-10 parachute, the reserve parachute canopy is deployed first. The T-10 parachute and reserve are so designed that both may be safely inflated at the same time. The parachute harness is designed for quick removal from the jumper's body. To get out of the harness, the jumper simply grasps the quick release at the waist band and pulls it, detaches the left side of the reserve parachute, pulls the safety clip from his quick release assembly, rotates the outer plate on the quick release assembly to the unlock position, and strikes it. He is now free to get out of his harness and assume his combat mission.

SECTION III. FIVE JUMP TECHNIQUES

The first Basic Jump Technique involves a series of nine commands that control the action of the parachutist inside the aircraft immediately before he makes his jump. When executed correctly, these commands will cause a safe exit from the paratroop door. We use a model or mock-up of the cargo compartment of a troop carrier-type aircraft for this instruction, similar to the one to your right front. These nine commands are used during all parachute jumps from an Air Force aircraft.

The jumpmaster, who is normally located in the rear of the aircraft, will give a hand-and-arm signal with the first seven of these nine commands to insure that all jumpers either hear or see the signals over the noise of the engines.

The first command, "Get Ready," alerts the jumper inside the aircraft. On the second command, "Outboard Personnel Stand Up," the jumpers seated next to the fuselage get to their feet, at which time they will raise and secure their seats, face the rear and assume a position near the jump door of the aircraft. On the third command, "Inboard Personnel Stand Up," the inboard personnel duplicate the actions of the outboard personnel. On the fourth command, "Hook Up," each jumper disengages his static line snap fastener from the upper carrying handle of his reserve parachute and attaches it to the anchor line cable. Upon clearing the door of the aircraft this will start the opening action of his main parachute. On the fifth command, "Check Static Lines," each jumper checks the static line and back pack of the man to his front.

The last two jumpers in each stick turn toward the front of the aircraft allowing the last man's static line and back pack to be checked. On the sixth command, "Check Your Equipment," the jumper checks the front of his own equipment. The seventh command is "Sound Off for Equipment Check."

The response to this command signifies to the jumpmaster inside the aircraft that all equipment is safe and ready for jumping. The eighth command is "Stand in the Door." Notice the door position. Knees bent, body erect, head and eyes straight to the front. This is a position of coiled alertness. The ninth command is "GO." On this command the jumper springs into what is called a body position. Notice the second jumper. On the command of "Stand in the Door," he shuffles into the door releasing his static line. On the command of "GO," he starts a straightening action of his legs, brings his chin to his chest, and upon clearing the door of the aircraft, grasps the reserve parachute.

Notice that each jumper counted "1,000, 2,000, 3,000, 4,000." If, at the end of this 4,000 count, he has not received an opening shock from the main parachute, he would activate his emergency parachute by pulling the ripcord handle.

The second Basic Jump Technique which the student must learn is the control of his body from the moment he leaves the door of the aircraft until he receives the opening shock caused by the inflation of the main parachute canopy. We use the 34-foot tower which you see to your left front for this instruction. The student mounts the steps of the tower into one of the two jump doors located at the top of the tower. In each of these doors, there is a jumpmaster who causes the student to exit the tower by using the last two of the nine jump commands--"Stand in the Door" and "GO." For the purpose of instruction the student receives an additional command--that of "Sound Off Your Name and Tower Number!" This identifies the student in the door to the grader seated at the base of the tower.

Airborne spirit and an attitude of teamwork is a must before he is fully qualified to receive the silver wings of a parachutist. Since, in military parachuting, we are primarily concerned with the mass exit technique, this teamwork I speak of becomes of the utmost importance. By

the term mass exit, I mean that the first jumper and first jumper only, in a stick of jumpers, is given the commands to stand in the door and go. Each jumper then, in turn, shuffles into the door and exits on his own command.

The student first practices this technique in the mock door apparatus. You will notice that there is approximately a one second interval between jumpers. This not only allows speed in the mass exit, but also allows each jumper time to momentarily gain his balance in the door before exiting.

After progressing satisfactorily in the mock door, the student is then required to practice this technique in a more realistic form from the mock tower. Again I invite your attention to the 34' tower. You notice that there is a red flag on the risers of the last jumper; this is a simulated malfunction. When the student observes the flag on his mock tower risers, he must snap back into a good tight body position and activate the reserve parachute.

The third Basic Jump Technique taught to the student is the control of the parachute during descent. The apparatus used to teach this technique is the suspended harness. It is designed to teach the student how to control his parachute from the time his canopy opens until he makes his parachute landing fall. It consists of a regulation T-10 parachute harness suspended from a steel ring by four web risers. This ring will react to manipulation the same as a canopy will on a live jump. In order for a jumper to move through space laterally, he reaches high on a set of risers in the direction he wants to go and pulls them down vigorously into his chest. This pulls down on one side of the canopy, changes its configuration and forces air from the opposite side; thus propelling the jumper through the air. To demonstrate: "Jumper, slip to your front."

Notice that the demonstrator is letting up slowly. This will cut down on oscillation; for, if a jumper should land with a downward oscillation, his bodily impact with the ground would be greatly increased. "Slip to your rear." Notice that the demonstrator is observing his direction of slip over the right and left shoulder in order to keep from colliding with fellow jumpers. "Slip to your right." Notice that on all of these slips, the demonstrator pulls his risers well down and holds them to his chest. This is required in order to make the slip effective. "Slip to your left." The farther the skirt is pulled down, the faster the lateral movement. Parachute control is a must for all parachutists in order to avoid contact with fellow jumpers in the air and obstacles on the ground.

The fourth Basic Jump Technique is making contact with the ground or the execution of the parachute landing fall. To many students, learning the correct execution of the parachute landing fall is the most difficult part of the Airborne Course. Since a parachutist descends at the rate of 17 to 22 feet per second and may carry as much as 100 pounds of combat equipment on his body, it is extremely important that he absorb the landing shock with a minimum risk of injury. An injured parachutist is a liability rather than an asset to his unit. To minimize this injury risk, we teach the student to absorb the landing shock on the fleshy portions of the body. He must avoid landing on the bony structures. We call these fleshy portions the five points of contact.

The first point of contact is the balls of the feet. The second, the calf of the leg. The third the thigh. The fourth, the buttocks. The fifth, the pushup muscles. At approximately 50 feet from the ground, or at tree-top level, the jumper prepares to land. This landing attitude is assumed by grasping the parachute risers. The head is erect. The eyes are straight to the front so the jumper is unaware of the exact moment of landing. The feet and knees are held together throughout the descent, with the knees slightly bent and the toes pointed slightly downward. All parts of the body are prepared for the landing shock, but without stiffness or tenseness. Immediately upon receiving the initial landing shock on the balls of the feet, the jumper contorts his body so as to expose the points of contact in their proper sequence. Only by contorting his body in this way can a jumper make a fluid, coordinated, and relaxed parachute landing fall.

To teach this technique, we use three landing fall devices. The first device is the two-foot parachute landing fall platform. The second device is the inclined ramp. It is designed to give the jumper a lateral movement similar to that of a live jump. The final apparatus is the four-foot parachute landing fall platform. It is designed to give the jumper a greater shock upon landing. Notice that the feet and knees remain together throughout the fall.

After he has mastered the parachute landing fall from the stable platform and ramp, the student is then advanced to the Swing Landing Trainer.

This device is designed to give a created oscillation and downward motion similar to that encountered during a live jump. You noticed the demonstrators mounted the steps of the Swing Landing Trainer to the six-foot high platform. Here he attaches the risers of the Swing Landing Trainer to his training harness using the canopy release assemblies positioned at each shoulder.

Since most jump casualties occur upon contact with the ground, careful training in this technique is mandatory.

I invite your attention to the demonstrator. Point one is rigged so that the demonstrator will be required to make a front or rear parachute landing fall. Notice that the demonstrator made a quick recovery. He will be critiqued by the instructor on the rope. Point three is rigged so that the jumper must make a right or left side PLF.

The last, or fifth Basic Jump Technique that the students must master is the control of his parachute after landing. Since a parachutist is often required to jump when ground winds are strong enough to drag him across the drop zone, thorough training in this technique is essential. We teach the students to first attempt the quick recovery. Upon making contact with the ground, the student will immediately try to get to his feet and run into and around the parachute to collapse it.

In high winds, the quick recovery is often impossible to accomplish. If his quick recovery attempt fails then the student must release his parachute canopy. This is accomplished by merely activating two canopy release assemblies positioned on his shoulders. These devices will separate the jumper's canopy from the harness. To teach this technique we use the wind machine which you see to your front.

Please observe the action of the jumper behind the wind machine while we demonstrate this technique. He simply released his parachute and is then free to move out on his combat mission.

The principal apparatus which we use to evaluate the student training proficiency before he is allowed to make his qualifying jumps, is the 250-foot free tower which you see to your direct front. Notice at the top of the tower there are four projections or arms. Due to wind conditions, we can only use three of these arms at any one time. At the base of the tower, you see a large plowed area. It is kept in this condition so as to reduce to the minimum any chance of student injury on landing. We have three grading points on the tower.

First: The jumpers command reaction as he is being hauled aloft and after he is jogged free at the top of the tower. This is a test of mental alertness.

Second: His ability to control his parachute during descent.

Third: His ability to make a proper landing.

To demonstrate the operation of this apparatus, I invite your attention to the near free tower. As each jumper is being hauled aloft, he is coached into the correct landing attitude by the principal instructor over a PA system. We use a safety line as a secondary safety feature.

As soon as the jumper reaches the six-foot automatic stop, he will release his safety line and drop it to the ground. The student will also receive a directional slip which he must take up in order to clear the steel framework of the tower. Then he begins receiving directions from another instructor located in the plowed area and equipped with a hand megaphone. These instructions are held to a minimum so as to let the student use his own initiative in controlling his parachute.

Gentlemen this tower, is in effect, the final test of all the instructions received by the student prior to jumping.

At the completion of the ground and tower weeks of training, the students who have satisfactorily mastered the five basic jump techniques and who can meet the PT requirements, progress to the jump or testing week of the Basic Airborne Course.

During this last week, the student makes his five qualifying jumps. The qualifying jumps differ one from the other in that they grow progressively more difficult. The first two jumps are individual tapouts; the last three are mass exits. All drops are made from an altitude of 1,250 feet. On this fourth jump the student will wear the equipment normally carried into combat. On the fifth and qualifying jump the student will participate in a mass exit from one of a series of aircraft flying in a tactical formation. At this time we will show you an aerial view of the parachute which the student uses during his qualifying jumps.

First, we will demonstrate the opening action of the T-10 or main parachute from the near free tower.

Notice the smooth opening action of the T-10 parachute and its characteristic mushroom shape. We will now demonstrate the opening action of the reserve or emergency parachute from the free tower. In doing this there are two disadvantages: First, the tower is only 250 feet high. On a live jump, should a jumper have a complete malfunction, he would activate his reserve at a height of from 1,000 to 800 feet. Second, we are starting from a dead standstill. On a live jump, with a total malfunction, a jumper's body might be traveling close to 100 miles per hour. Notice the parachute opened approximately half the distance to the ground.

The training techniques you have just seen demonstrated are the result of over 20 years of experience. The success of this training is attested to by over 233,000 graduates of this school. During the past calendar year alone we graduated 18,500 parachutists who participated in close to 100,000 parachute jumps. During this period only 116 injuries were sustained while jumping. This represents an injury rate of 1/10 of one percent or one injury per 1,000 jumps. This injury rate does not reflect the difficulty of the course - rather it proves the techniques we teach. The course is rugged, the training excellent, and graduates of this course - approximately 80% of the starting strength - are better officers and men for having completed such training. Make no mistake about it - the American Airborne Soldier is technically well trained and capable of performing his Airborne Combat Mission.

SECTION IV. PATHFINDER OPERATIONS

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Superior mobility will be a primary factor for success on the nuclear battlefield, just as it has been on battlefields of the past. We must be able to move our combat elements rapidly, concentrate for attack, resupply them quickly, and then disperse before the enemy can retaliate with nuclear weapons. To do this the Army needs increased mobility; not only strategic mobility but maximum battlefield mobility.

When we speak of mobility today, our thoughts turn to Army Aviation. The Army has low performance fixed and rotary wing aircraft, which, when properly employed, will give the commander greater mobility than he has ever had before.

If the tactical commander has a basic understanding of Army Pathfinders and how they can assist in operations involving Army aircraft, his chances of success will be considerably increased.

During this period, gentlemen, we are going to discuss Army Pathfinders; their mission, history, organization, capabilities, and the types of airmobile operations they can support. Following this, we will briefly discuss the prerequisites and content of the Pathfinder Course.

Contrary to some conceptions, the Pathfinder Detachment is not a clandestine group of individuals, but rather a regular TO&E Army unit. In most cases they can be recognized by the distinctive emblem on their uniforms.

The torch on the emblem is symbolic of the torch carried to the ancient Greek olympic games. The men who carried the torch were selected for their speed, stamina, and courage. The wing depicts an inherent airborne capability and the black background is suggestive of the night operations common to Pathfinder units. The motto is indicative of the Pathfinder mission: Always First.

Army Pathfinders are selected airborne volunteers who are trained to provide navigational assistance to Army aircraft. In essence, this is the principal mission of this unit: to provide navigational assistance and air traffic control for Army aircraft on or over enemy-held or enemy-threatened territory, or in areas not previously reconnoitered. This includes assistance to enable the aviator to fly to the objective area. At the objective area, Pathfinders provide terminal guidance and actually control the aircraft within and on their departure from the operational area.

Current doctrine calls for the employment of Army aircraft in helicopter assaults and air-dropped and air-landed resupply missions. Experience has shown that when aircraft are used for these critical missions, it is essential to have trained personnel in the objective area to provide navigational assistance.

The need for Pathfinder was first recognized during the early part of World War II, after the first American combat airborne operation. This operation was conducted by the 509th Parachute Infantry Battalion in November 1942 when they jumped into North Africa, the first step toward Fortress Europe.

Gentlemen, the parachute phase of this operation came close to being a complete failure. The parachutists of the 509th, upon landing, found themselves some 30 to 60 miles from their intended drop zones. True, the mission was accomplished, for when the closest element of the

509th marched to the objective, they found it already secured by a ground unit. What happened to cause such an error? We can sum up the entire situation by saying there was a complete lack of coordination between those involved, and a lack of experienced pilots and navigators.

Let's move on to our second combat airborne operation; the island of Sicily. This was the first large-scale night airborne operation ever conducted. There was a relatively short flight route and it was felt that the pilots would have no large problem in delivering the 504th and 505th Parachute Infantry Regiments to their respective drop zones. Gentlemen, this too was almost a failure: parachutists were scattered all over the island of Sicily as far as 30 to 40 miles from their objectives. Yes, the mission was accomplished here also, for it certainly confused the enemy. They thought at least 2 or 3 airborne divisions had invaded the island when actually there were only 6 battalions. Drop zones were missed, troops were lost, our own aircraft were shot down by friendly gunfire. Why? Here, again, a lack of good aerial navigation and not nearly enough coordination.

These two operations were rather discouraging to the airborne commanders. Something had to be done! Something was done!

The Commanding General of the 82d Airborne Division asked for and received volunteers to become Pathfinders to light the way for their units, to mark drop zones to insure accurate delivery on the objective. These volunteers were trained in Sicily and baptized by fire in Italy when Pathfinders of the 504 and 505 PIRs jumped into the beaches at Salerno and assisted in marking the drop zones. This operation was a success. These two units were 85% effective on landing.

This was the proving ground for Pathfinders and it was determined at this point that they should and would be used on all airborne operations. The first recognized Pathfinder school was established at North Witham, England, in the spring of 1944, and began training volunteers from the 82d and 101st Airborne Divisions for the biggest operation of World War II - Operation "Overlord" - the invasion of Normandy. The training for these men was intense with emphasis being placed on the employment of night navigational aids and night assembly problems. To attain the proficiency desired for this operation these men made a total of 27 rehearsal jumps. Training was completed, preparations were made, and on 6 June 1944, at 0015 hours, the first man to touch ground in this invasion was a Pathfinder.

We know this operation was costly, not only for the airborne, but for everyone. Pathfinders suffered a casualty rate of from 40% to 90%. However, in every case, there was at least one Pathfinder who made his way to his designated drop zone and established a navigational aid.

This operation was a success and each operation thereafter became more successful; the jumps into Holland, across the Rhine, and Tag-Ta-Tay Ridge in the Pacific all were vastly improved in technique from the 509th's jump into North Africa.

The experiences gained from these operations were many and our commanders realized that the employment of Pathfinders would be essential in all future airborne operations. Training was suspended in England and the Pathfinder school was reformed here at Fort Benning in 1946. This school has been qualifying Pathfinders since that time with the exception of the period 1951 - 1954. In 1951 the Air Force Combat Control Team assumed the mission of providing navigational assistance to Air Force Aircraft. A mission, incidentally, for which they are still responsible.

Following the Korean War, with emphasis being placed on the use of Army aircraft for air-mobile operations, Department of the Army directed the Infantry School to begin training Pathfinders to provide navigational assistance for Army aircraft.

Before we discuss just what Pathfinders can do, let's first examine what they have to do it with.

A Pathfinder Detachment consists of 2 officers and 13 enlisted men.

The three key positions of a detachment are the detachment commander, the executive officer, and the detachment sergeant. The detachment commander is a first lieutenant. As with all commanders, he is responsible for the training, performance, and conduct of his unit. One of his most important functions, however, is to act as an advisor to the supported unit commander in relation to selecting the landing or drop zones necessary to support the tactical plan.

The executive officer may be either a first or second lieutenant. In addition to his normal administrative duties he will also perform as liaison officer between the detachment and the supported unit. This detachment may be split and operate as two teams. In this case the executive officer would command the second element.

The detachment sergeant is an E-6 with an MOS of 311.67, communications specialist. He must be capable of performing the duties of the detachment commander and executive officer, as well as supervising and controlling the remaining members of the detachment.

Another 311.67, in addition to his responsibility of maintaining all communication equipment in the detachment, will also act as assistant detachment sergeant. This application of cross training is not confined to the leaders, but is applied to the entire detachment. Through the detachment training program the commanding officer will insure that each member is capable of performing in any duty position.

Due to the complicated communication equipment being used, it was necessary in the past to have 2 communications specialists in each detachment. However, the elimination of this equipment, along with the expansion of Army aviation and the increased responsibility given Pathfinders, has prompted a change to the TO&E.

This TO&E has been approved by DA and will soon replace the current TO&E.

The number of personnel remains the same. The major changes occurred in rank and MOS, along with a few items of communication. The detachment commander has been upgraded to captain to provide additional experience and to provide an advisor more informed in battalion and brigade tactics. The detachment sergeant/communications specialist has been replaced with an Infantry platoon sergeant for a greater leadership capability.

Since all Pathfinders are capable of instructing units in terminal guidance techniques, they have all been upgraded to ranks commensurate with that responsibility.

At present time, there are four Pathfinder detachments organic to each field army. This is in conjunction with the authorized four aviation battalions and normally you will find a Pathfinder detachment with each battalion.

There are two Pathfinder detachments located in the Third Army area - the 187th Pathfinder Detachment at Fort Benning which supports the Infantry School, and a Provisional Detachment at Fort Rucker to support the Aviation School. You will also find under ROAD organization that the division commander has the authority to augment a Pathfinder detachment to the aviation battalion. We feel that this is where Pathfinders belong. It is very desirable to have Pathfinders work and live as close as possible to the aviation unit they will be supporting to learn each others capabilities and limitations, and develop a mutual respect and trust. This, then, is the unit that will support you during airmobile operations. To understand how Pathfinders can affect your mission, let's look at the capabilities of the detachment.

There are four principal capabilities of the Pathfinder detachment. First of all, Pathfinders are not limited to parachute delivery, but can be introduced to the objective area by any land, sea, or air means.

As soon as the detachment is alerted for a mission, the commanding officer begins his planning by making a reconnaissance of the objective area, using available maps and aerial photos. If the tactical situation allows, he may make an aerial recon. While the detachment is enroute to the objective area they are prepared to conduct another type of recon; a radiological recon of the flight route. They monitor with organic radiac instruments and report any contamination back to the supported unit commander.

At the objective area the commander makes a normal reconnaissance to determine the enemy situation for his own security and relays this information to the supported unit. At the same time, the detachment commander is selecting the best locations for the facilities to be installed. Obstacles are quickly located and subsequently marked or removed. If nuclear weapons have been employed, a radiological survey can be conducted concurrent with the ground reconnaissance.

As soon as the reconnaissance is completed and the detachment has decided on the location of their installations, navigational aids are positioned and prepared for operation. The detachment has both visual and electronic aids to furnish the necessary navigational assistance for approaching aircraft.

All aids used by the Pathfinder are light, rugged, easy to operate, and easy to maintain or replace. Visual aids used include VS-17 panels. These panels are cerise on one side and international orange on the other, and are the standard day visual aid. The red side is normally used to mark obstacles or to depict a danger or caution area to the aviators. The orange side is used as a standard marker for various installations.

The MX-290, or "just rite" lantern, is our standard night visual aid. It can be equipped with various colored lenses, which would be coordinated prior to an operation, and it also has a blinking or steady light capability. The AN/CVX-1 light beacon is employed as a long range night visual aid. This beacon comes equipped with infrared lenses which can be removed and replaced with several colored lenses. By simple adjustment, the lights may be set on precoordinated code settings. This light is visible for approximately 10 miles.

The detachment uses smoke for a long-range day-visual aid. Although there are 5 colors available, here again red is used only as a danger signal. Various flares and pyrotechnics are also used.

As the detachment is setting up its navigational aids, communications are also being established. On every operation three communication nets are established and operated. The first net in priority is the ground-to-air net over which the detachment will transmit to the aviators necessary navigational instructions, landing or drop instructions, and information about the enemy, weather, and terrain. The second net is the Pathfinder command net. All installations within the landing zone are linked together by PRC-6 or PRC-10 radios. The final net is the long-range ground net linking the landing zone with the departure area. PRC-10 radios are normally used for both the ground-to-air and long-range ground nets. Although the VRQ-3 is organic to Pathfinder TO&E, it is difficult to take initially to the objective area. Airborne relays and RC-292 antenna are used to increase the range of the sets used.

Now that we have looked at the visual and electronic equipment normally used by the Pathfinder, let's take a look at two Pathfinders prepared to be delivered into the objective area by parachute. First, both Pathfinders are wearing the standard T-10 parachute assembly worn by all paratroopers and each has a T-10 reserve.

The Pathfinder to your left front is carrying the parachutist adjustable equipment bag, commonly referred to as a PAE bag. This container is capable of delivering up to 95 pounds into the objective area. A type load for this bag might be the RC-292 antenna complete. For Pathfinder use this bag is limited, since it cannot be easily transported by the individual.

The jumper to your right front is carrying the Rucksack. A type load might be the ANCVX-1 with battery, weighing approximately 60 pounds. This bag has been adapted for use by the Pathfinders since it can be easily transported by its carrying straps by one man within the area of operation.

The fourth capability of the detachment is to assist in troop assembly. Pathfinders will mark an initial assembly point at each landing site to expedite the removal of troops and equipment. This also assists the unit commander in regaining control and gets the troops moving toward their objective or preplanned assembly area. The marking of assembly points must be coordinated prior to the mission. The most common assembly aids are VS-17 panels and MX-290 lanterns. Pathfinder radios can keep the supported commander informed as to the disposition of his troops. When augmented with troops and equipment from the supported unit, in addition to marking assembly points, the detachment is capable of supervising reconnaissance of assembly areas and marking routes to the objective.

These are the capabilities of a Pathfinder detachment. They can conduct a reconnaissance which may include a radiological survey, establish and operate navigational aids, establish communications with the aircraft, within the objective area and back to the departure area, and finally, assist in troop assembly.

Pathfinders are trained to support three types of airmobile operations: helicopter, fixed wing, and air drop. We will discuss each of these from a Pathfinder standpoint to give you a picture of what a unit can expect to see upon its arrival into the area of operation.

A helicopter landing zone (HLZ) consists of one or more landing sites, a control center, and a release point. The control center is the command post and communication center which controls the operation of the landing zone. It is normally located adjacent to a landing site to provide a greater degree of security. The primary ground-to-air and long-range radios are located here. The purpose of the control center is to control air traffic on the approaches to and within a landing zone, and to promote rapid but safe and orderly movement.

A release point is established to provide an air traffic control point and a final navigational checkpoint for aircraft approaching the landing facility. It is located at a point on the planned flight route on terrain that offers maximum operating range for long-range electronic and visual aids. A homing beacon is employed here and a code letter is displayed to identify the landing zone and further insure accurate delivery in the proper area. A precoordinated code letter is displayed at all Pathfinder installations.

A landing site is the area where the supported commander wants his personnel and equipment delivered. The site operator marks the landing points for each aircraft and controls them through the use of visual aids and hand-and-arm signals. He also marks obstacles and troop assembly points.

For night operation of the HLZ, the VS-17 panels are replaced with MX-290 lanterns and the CVX-1 light beacon is used as a long-range visual aid. The conduct of the operation remains the same.

To understand how the operation works, let's follow a flight of helicopters from a predesignated communications checkpoint commonly referred to as a "CCP" to some landing sites. A communications checkpoint is a prominent terrain feature along the flight route known both to the aviators and the Pathfinder. It is readily identifiable from the air and normally is the last checkpoint on the flight route. At the CCP the flight leader initiates communications with the landing zone control center, hence the name communications checkpoint, telling them how many aircraft are in his flight. Based on prior coordination with the supported unit CO, the Pathfinder will give the flight first a vector (magnetic azimuth) from the CCP to the release point,

secondly he will give them landing site azimuths from the release point to the landing sites and, finally, a landing azimuth based on obstacles and wind conditions. A typical transmission could be as follows:

FLIGHT LEADER: Pathfinder, this is Eagle with flight of four at CCP, over.

PATHFINDER: Eagle, this is Pathfinder; vector 360°; enemy situation negative; wind northeast at 10; Eagle 1 and 2 landing site azimuth 270°; land blue 015; Eagle 3 and 4 landing site azimuth 090; land green 015; clear to land, over.

FLIGHT LEADER: This is Eagle, roger, out.

When operating at their maximum capability, the Pathfinder detachment can operate eight landing sites simultaneously. Each site may have eight landing points for a total of 64 aircraft which can be received at one time.

The second type of airmobile facility that Pathfinders can operate is a fixed wing landing zone.

A fixed wing landing zone has one or more landing strips. A landing strip may have a taxiway, a parking area, and a dispersal area if required. If there is more than one strip, a release point may be used which will function the same as for a HLZ.

The detachment is organized into two basic parties to operate this facility: the control center and a parking party. If there are two strips, a control center is required at each with the primary control center at the strip of most importance. The control center's responsibility remains the same: controlling the aircraft over ground-to-air radio.

The parking party reconnoiters the entire facility and prepares and marks the landing strip, taxiway, parking area, dispersal area, and troop assembly points. They monitor commo from the control center and furnish security within their means.

For day operations the facility is marked with VS-17 panels; at night they are replaced with MX-290 lanterns. If a priority of marking is necessary, it will be approach end and departure end always in red, left side and right side. Taxiways and parking areas are marked concurrently.

The third facility that Pathfinders can operate is a drop zone.

A drop zone (DZ) is a specified location where troops and/or equipment are to be air delivered. For a drop zone operation the Pathfinder detachment is organized into a control center and a DZ party. A release point is not employed unless two or more drop zones are being operated.

The control center again controls the aircraft within the area.

The DZ party prepares and positions the panels or lights that form the "T" and positions the flank and far panels or lights.

The "T" location depends on several factors. The "T" is not the desired impact point but rather the point over which the aircraft discharges its cargo. The stem of the "T" is aligned with the long axis of the drop zone or on a prearranged azimuth. The flank panel is positioned 200 meters to the left of the base panel and aligned with the crossbar of the "T". The far panel is installed 500 meters, or the length of the drop zone, in the direction of flight and on line with the stem of the "T". As the aircraft approaches the drop zone, the pilot uses the far panel as

a reference point to align with the "T." As the aircraft comes nearer, because of the configuration of most pilot compartments, the pilot can no longer see the "T" but by using the flank and far panels as reference points he can determine his release point. The procedure for a night drop zone remains the same with lights and beacons replacing panels and smoke.

If the supported CO does not desire the use of visual aids, the Pathfinder will control the aircraft by voice. He positions himself at the computed release point and guides the aircraft over him.

You have seen the three airmobile facilities that Pathfinders are trained to support. Let's look now at the training required to qualify these men.

The Pathfinder Course is 5 weeks and 2 days in duration. The school prerequisites are found in Change 15 to the Army School Catalog. Although the student must be airborne qualified, he need not come from an airborne unit. In contrast, we strongly encourage non-airborne units to make use of available quotas.

The student must be in good physical condition, and demonstrate this by passing a test composed of the airborne minimums. This includes 6 chinups, 22 pushups, 80 knee benders within a 2 minute time limit, 20 airborne situps, and a 1-mile run within an 8 1/2-minute time limit.

The Pathfinder course itself consists of realistic training with emphasis on practical work.

The student receives extensive training in map, aerial photograph reading, and land navigation.

He receives 12 hours of formal instruction on Infantry communication techniques in addition to many hours of practical application in the field. The Pathfinder learns demolitions to the extent that he can remove obstacles from landing on drop zones. During the course the student will go to the Chemical School at Fort McClellan, Alabama, where he is taught radiological survey techniques. While there he will conduct both ground and aerial surveys over a live cobalt field. Some 156 hours are devoted to Pathfinder operations and techniques. During the course, the student becomes familiar with all Army aircraft and learns their capabilities and limitations through close association. He performs in each type of operation discussed, first administratively, both day and night, and then on graded tactical field exercises with minimum supervision. During these exercises the student makes frequent parachute jumps under realistic tactical conditions.

The completion of the course is highlighted by a continuous 32-hour problem conducted in such a manner as to employ all techniques taught during the course and to present many realistic problems that a Pathfinder detachment may encounter on actual missions. Upon successful completion of the course the Pathfinder is then graduated and either assigned to a detachment or returned to his parent unit.

Army aircraft will be used extensively in the future to gain the mobility necessary to fight, survive, and win. With the increased demand for Army aircraft, there will be an equal demand for Pathfinders to provide positive guidance for them.

In the future, more and more operations will be supported by Army aircraft. Pathfinders are trained to support these operations. A lack of knowledge or understanding on how to employ this detachment will deprive a commander of a very efficient unit that can assist him greatly in any airmobile operation.

CHAPTER 6

VEHICLES AVAILABLE TO THE INFANTRY COMMANDER

SECTION I. ORIENTATION AND DEMONSTRATION OF NEWER INFANTRY VEHICLES

CAPTAIN CHARLES C. HOWARD

Chairman, Vehicle Capabilities Committee, Mobility Department

During the second world war and the Korean conflict, we used the old triangular concept of organization. In each regiment there were three battalions. Each battalion had 900 men. These 900 men had an area of responsibility of 2200 meters of frontage and 1300 meters in depth. In some cases an Infantry battalion could not man this amount of terrain. Now let us look at the ROAD battalion. Under the ROAD concept we find there are 850 men in a battalion. These 850 men have an area of responsibility of 3000 meters of frontage and 2500 meters in depth. If we could not always be depended upon in Korea and during World War II to successfully man this amount of terrain, how can we be depended upon in the future to man twice the amount of terrain with less people? The answer to this question is mobility. On future battlefields we must be mobile. We must have the ability to mass our troops, move to the critical point, disperse, accomplish the mission, remass, move, disperse, and so on, as fast as our mobility means permit.

There are four essentials for the maximum development of ground vehicular mobility. These four essentials are: (1) The commander must know the disposition and quantities; where are these vehicles located and how many are there? (2) He must know the capabilities and limitations of his vehicles; what can they do and what can they not do? (3) He must insure efficient operation, that is, good driving. And, (4) proper maintenance. During this hour we will discuss the first two of these: disposition and quantities, and capabilities and limitations. This hour is divided into two phases. The first portion of the hour we will spend here at the rear bleachers where the newest vehicles in the inventory will be driven by and discussed briefly. After this we will move to the forward set of bleachers where we will watch the vehicles negotiate the obstacle course, to better point out their capabilities and limitations.



Figure 1. Tank, Combat, Full Tracked, 105mm Gun, M60.

Let us start right out with the largest vehicle we have in the inventory, the M-60 main battle tank. (Figure 1) There are 54 of these vehicles found within the tank battalion of the Infantry, Mechanized, and Armored division. The principal armament is a 105mm gun. Mounted coaxially with this 105mm gun is a 7.62mm machinegun that fires separately or in conjunction with the main armament. At the commanders station is a 50-caliber machinegun. The vehicle is manned by a crew of four. They are: the driver, vehicle commander, loader, and gunner. For instructional purposes let us divide the tank into three compartments. These are: the driver's compartment, the fighting compartment, and the engine compartment. In the driver's compartment, the driver has everything at his disposal to negotiate the vehicle across the battle field. To steer the vehicle is a steering wheel much the same as you have in your privately owned automobile. In the fighting compartment are all the controls necessary to fight the tank. The engine compartment houses a 750-horsepower diesel 12-cylinder air-cooled engine. Mounted at right angles with this engine is a cross-drive transmission. The engine delivers its power to the driving sprockets, the only power driven wheels on the vehicle. The three small wheels at the top of the suspension system are support rollers. Their only function is to support the weight of the track. The wheel located at the front is the compensating idler wheel. It is attached to the first road wheel and as this road wheel hits a bump or falls into a hole, this compensating idler wheel moves back and forth as necessary to maintain proper track tension. The larger wheels at the bottom of the suspension system are road wheels. There are six located on either side, mounted in pairs for a total of 24 road wheels. The suspension system is torsion bar. All of our new track-laying vehicles have torsion-bar suspension. All of this together, combat loaded, makes up fifty-one tons. This 750-horsepower engine we mentioned has a capability of moving this vehicle across the battlefield at speeds up to 30 miles an hour for approximately 335 miles on 385 gallons of diesel fuel. The mission, as far as the Infantry is concerned, is to support the Infantry during their tactical operations; the mission as far as armor is concerned, is to locate and destroy enemy armor.

We have seen the vehicle that gives antitank support to the Infantry during their operations. Now, let us look at the vehicle that is going to transport our Infantry troops across the battlefield. This is the M-113 Armored Personnel Carrier. (Figure 2) There are 66 of these

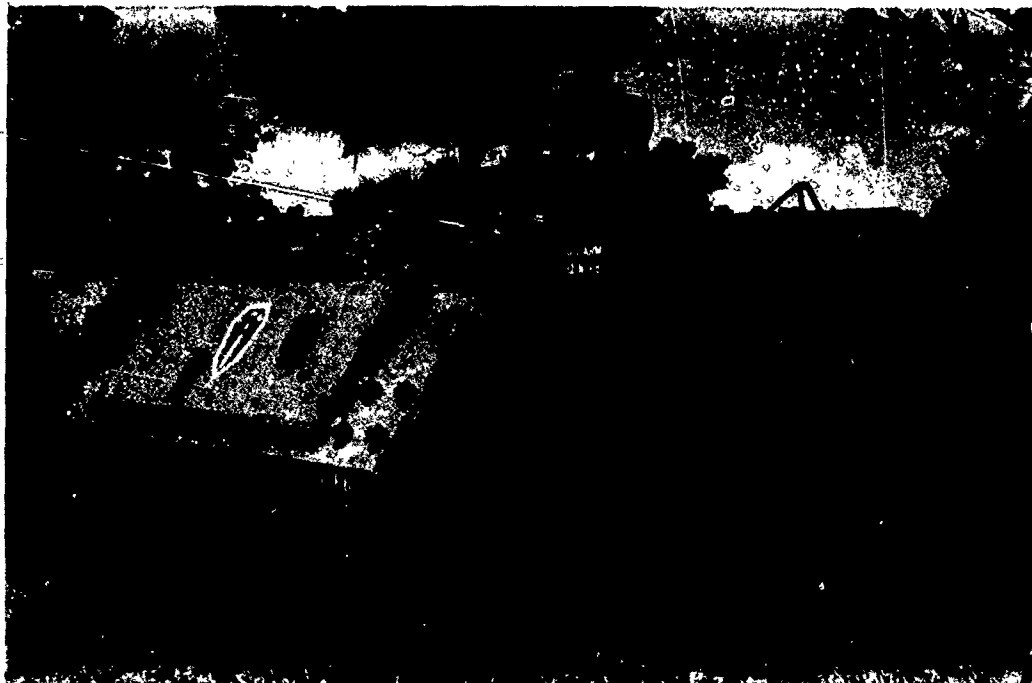


Figure 2. Carrier, Personnel, Full Tracked: Armored, M-113.

vehicles within the mechanized battalion. The vehicle's armament is a 50-caliber machinegun. The crew is one man, the driver. Again, we find three compartments. The driver's compartment, the cargo or personnel compartment and, up in front, the engine compartment. The engine is a watercooled 215-horsepower Chrysler V8 that will move the vehicle at speeds up to 40 miles an hour for 200 miles on 80 gallons of gasoline. The M-113 can carry 13 personnel fully equipped for combat, or 3860 pounds of cargo. Although designed to transport Infantry troops, it can be used effectively in other roles. To mention a few of these multiple uses, they are: cargo carrier, command post, litter carrier, communications vehicle, and reconnaissance. The multiple uses of the M-113 are restricted only to the imagination of the user. Primary mission of the vehicle is to transport the Infantry squad across the battlefield. The vehicle is amphibious and will swim at the rate of about 3.7 miles an hour.

Another personnel carrier we have is the M-116 unarmored carrier, cargo, amphibious: tracked. (Figure 3) "Husky" is the accepted nickname for this vehicle. The disposition for this vehicle is WABTOC, or When Authorized By The Overseas Commander. The vehicle has no armament. It is manned by a crew of one, the driver. The M-116 has a 160-horsepower Chevrolet V8 watercooled engine that will move the vehicle across the battlefield at speeds of 37 miles an hour for 300 miles on 65 gallons of gasoline. The vehicle weighs four tons and can carry 14 troops wearing arctic clothing or 3000 pounds of cargo. The vehicle was developed to replace the Otter and the Weasel. The M-116 will swim at the rate of about four miles an hour.



Figure 3. M-116, Carrier, Cargo, Amphibious: Tracked.



Figure 4. Carrier, Personnel, Full Tracked: Armored, M-114.
(Command and Reconnaissance)

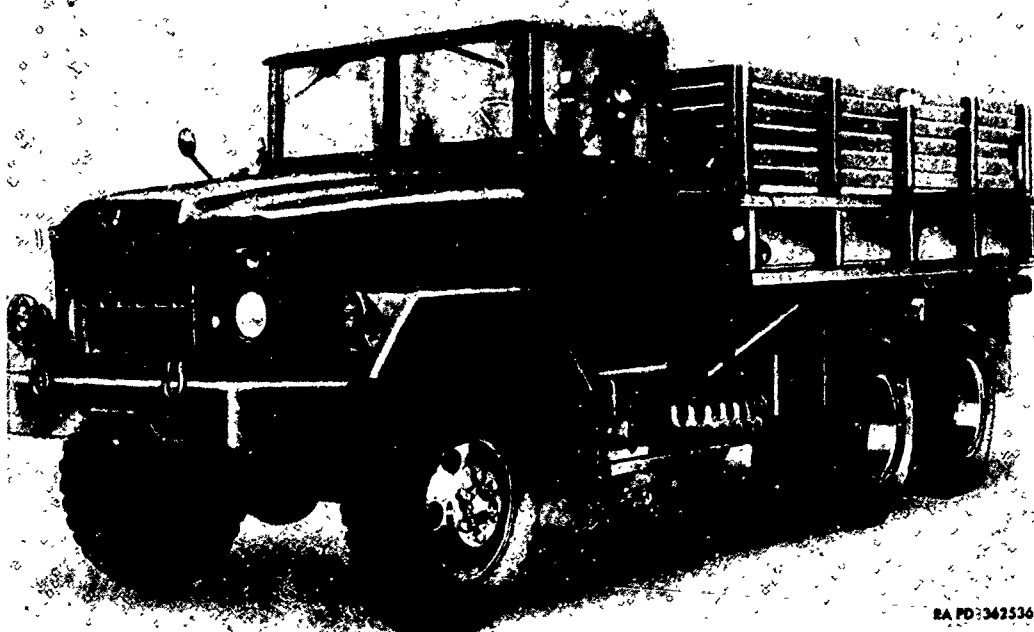


Figure 5. 2 1/2-Ton, 6x6, M-35A1 (Multifuel Engine).

We have another new track laying vehicle in the inventory and this is the M-114 Armored Reconnaissance Command Vehicle. (Figure 4) This vehicle was designed to replace the gun jeep and the platoon leader's jeep in the armored cavalry platoon of the mechanized and armored battalion. It will replace the same vehicles in the armored cavalry squadron. The vehicle's armament is a .50-caliber machinegun and a 7.62mm machinegun. This vehicle also has three compartments, which are: the driver's compartment, the fighting compartment, and the engine compartment. The M-114 has the same power plant as the M-116, a 160-horsepower Chevrolet V8 watercooled engine that will move this vehicle across the battlefield at speeds up to 34 miles an hour for 300 miles on 110 gallons of gasoline. The mission of this vehicle is reconnaissance and surveillance. Like the M-116 and the M-113, the M-114 will swim. Maximum speed in the water is approximately 3.5 miles an hour.

That concludes the demonstration on the track laying vehicles. I would now like to show you some of the newer wheeled vehicles currently found within the inventory. The first of these is the M-35A1 multifuel 2 1/2-ton truck. (Figure 5) There are 17 found within the Infantry battalion. It looks much like the M-35 except it is powered by a multi-fuel engine.

The next vehicle you see is the M-37B1, 3/4-ton truck. (Figure 6) There are 42 of these vehicles found within the Infantry battalion. The next vehicle you see is the M-151. (Figure 7) This is the new 1/4-ton vehicle, and there are 45 found within the Infantry battalion. The M-274 Army Mule is next and there are 20 of these found within the airborne battalion. (Figure 8) I might add that the M-274 is the only vehicle in the inventory designed to carry more than its own weight. It will carry 1000 pounds and weighs only 900 pounds. This vehicle is the M-62 five-ton medium wrecker. (Figure 9) The vehicles we have seen so far have outstanding capabilities. We find, however, that during field training exercises and in combat, the capabilities are sometimes violated, which necessitates recovery. The five-ton wrecker is one of the recovery vehicles available to you. In the armored battalion we find there are 92 wheeled vehicles, 88 tracked vehicles. To recover these vehicles as they become immobilized are three medium wreckers and five recovery full-tracked vehicles. In the mechanized battalion there are 96 wheeled vehicles, 78 tracks, with one medium wrecker and five VTR's. In the Infantry battalion there are 126 wheeled vehicles and one light wrecker. By comparing the number of vehicles in each type battalion with the number of recovery vehicles available, you can see that at times a recovery vehicle may not be immediately available to you. Therefore, there is a need for a knowledge of field expedient recovery techniques. Leader classes receive two hours on this subject and our specialist classes spend up to eleven hours in our recovery area.

Today we are showing you the newer vehicles in the inventory. These are by no means all that are available to you. The handouts have pictures and performance data on all standard "A" vehicles currently found in the inventory.

Obstacles normally encountered in combat require that military vehicles have the power, traction, flotation, and momentum to overcome them. All military vehicles are designed to negotiate a 60 percent slope, and each vehicle is constructed to negotiate obstacles with a specifically rated performance capability that requires a well-trained operator. The large water obstacle is 40 inches in depth and designed to demonstrate fording ability, traction, and flotation. Dirt mounds demonstrate the action of the torsion bars on the tracked vehicles. The ditch demonstrates spanning capability, and the wall demonstrates the vertical climbing capacity of the tracked vehicles. The mud obstacle demonstrates traction and flotation. Log obstacles also demonstrate the action of the suspension system on wheeled vehicles.

The M-60 Main Battle tank will ford 48 inches of water, span a ditch 8 3/4 feet wide, climb a vertical obstacle 36 inches high, and employs neutral steer enabling it to turn within its own length. The M-113 has an unlimited fording capability, will span a ditch 5 1/2 feet wide, climb a vertical obstacle 24 inches high, and requires 22 feet 8 inches to turn around. The M-116 has the same capabilities as the M-113, except the M-116 has a vertical climb of 31 inches and

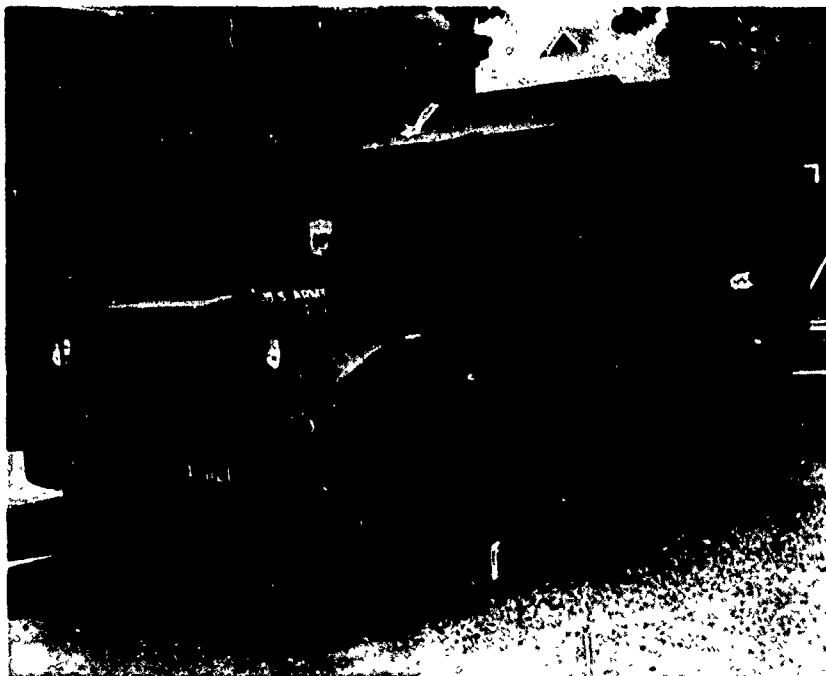


Figure 6. Carrier, Weapons, 3/4-ton, M37B1.



Figure 7. Truck, Utility: 1/4-Ton, 4x4, M-151.

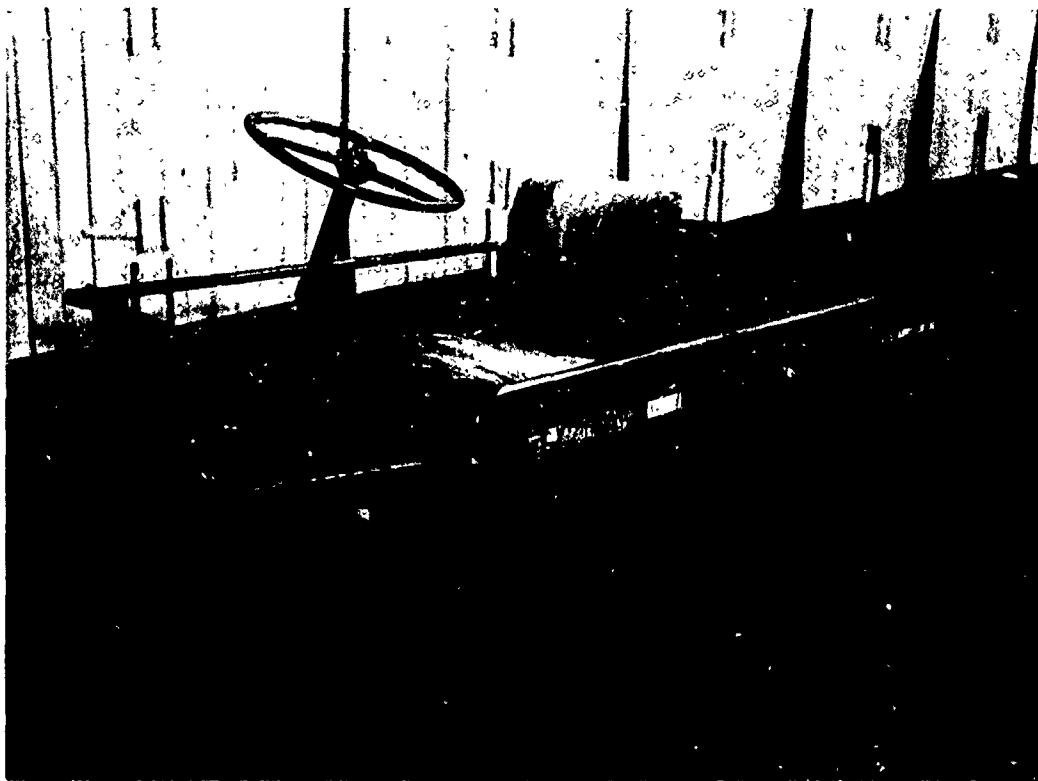


Figure 8. Carrier, Light Weapons, Infantry, M-274.



Figure 9. Wrecker, Medium 5-ton, M-62.

has a pivot steer capability. The M-114 Command and Reconnaissance vehicle has the same capability as the M-116, except that it will span 60 inches and has a vertical climb of 12 inches. The 2 1/2-ton truck will ford 30 inches of water without a fording kit -- with a fording kit, 72 inches. The M-151, 1/4-ton vehicle has individual wheel suspension and will negotiate log and similar obstacles with ease.

Tracked and wheeled vehicles that have been discussed and demonstrated are in the hands of troops or will become available in the immediate future. Knowledge of their capabilities can be the connecting link in a broken lifeline. In the hands of the uninformed they are a burden, but in the hands of the informed they are a mighty weapon, a tool of the trade. Knowledge of this tool is a must on the nuclear battlefield in order to stay alive to close with and capture or kill the enemy.

SECTION II. RECENT TRENDS IN MAINTENANCE AND MAINTENANCE MANAGEMENT

MAJOR HENRY E. VINCENT

Chairman, Command Supervision Committee, Mobility Department

The task of keeping equipment combat ready is everybody's job, from the highest to the lowest echelon of command. Every individual must be made to realize that the equipment he is using today may be what he will have to fight with tomorrow. Maintenance is the key to success in keeping our equipment combat ready. Every individual must be taught how and provided time to maintain his equipment just as he is taught how to fight. This has not been true in the past. However, in August 1962, AR 11-14 was published and should improve the situation. It directed that commanders would provide prime military manhours for the performance of required preventive and corrective maintenance and that the criticality of material readiness must be considered equal to that of personnel training and readiness. It also stated that a proper balance must be maintained among training, maintenance, and all other requirements essential to combat readiness.

Since 1960, several major changes in the field of maintenance and maintenance management have occurred or are in the process of being changed. One of the major changes was caused by a review completed in 1960 by the General Accounting Office (GAO) concerning the procedures used by the Army in the development, procurement, and maintenance of new combat and tactical vehicles. GAO alleged that the Army was unable to determine the maintenance status of its automotive equipment. This resulted in a Congressional inquiry and recommendations made by Congress to the Secretary of the Army to correct this undesirable situation. The Army recognized that the Equipment Records System was due for an overhaul, not just for tank-automotive equipment, but all equipment.

In December 1960, the Army established its plan of action which resulted in what was known as "Operation TAPER" (The Army Plan for Equipment Record Revision). The objective of TAPER was to revise as necessary the Army's current equipment records system to provide a simple, effective, standard procedure that would produce essential maintenance intelligence and provide the necessary controls for each successive level of command and supporting echelons starting with the equipment operator and his unit. To accomplish this objective a review and evaluation of all existing forms, records, and directives was conducted. The study group decided to use a hypothetical unit called a battle brigade to emphasize the forms and records found at the first and second echelons of maintenance in a unit below division level. There was a total of 84 maintenance forms and records and 20 directives for procedures involving the use of these forms and records required for equipment in this hypothetical unit.

The review disclosed that the basic problem was duplication. The Army over the years had simply added new forms and directives to old ones in an attempt to keep pace with its expanding inventory of complex equipment. The results of this review was a reduction of 51 forms and records and 15 directives required for this hypothetical battle brigade.

The TAPER task force studies and actions resulted in a streamlined, standardized, equipment record system for all categories of equipment. It provided for common maintenance language and standardized the application of records and reports for all categories of equipment regardless of the level of command or echelon of maintenance involved. This revised system was field tested and evaluated in selected units during the period 1 July through 31 December 1961. The principal test units were the 4th Armored Division, 101st Airborne Division, 4th Infantry Division, and the Armor Center at Fort Knox, Kentucky. Upon completion of the test, the system was revised and then adopted as the new Army Equipment Records System and Procedures, commonly referred to as "TAERS." It was implemented Army-wide during the period 1 July through 31 December 1962. One technical manual, TM 38-750, contains the complete procedures for the new records system.

There are three "keys" to the records system. They are: The Equipment Logs, the Equipment Inspection and Maintenance Work Sheet, and the Maintenance Request.

There are three types of Equipment Logs: the loose-leaf log book, the single card log, and the bound book. The loose-leaf log book is the "US Army Equipment Log Book" and will be used for the more complex items of equipment such as wheeled or tracked vehicles. It will contain a series of color coded card inserts which will be used to record essential maintenance and historical data for the item involved. An index for equipment log book assemblies is included in each log book which shows the records applicable to specific items of equipment. This log book must be with the item of equipment any time it is in use or when maintenance is being performed. It also serves as official authorization to use the equipment it pertains to. The log book is a controlled item and must be safeguarded to prevent loss or damage.

The single card log is the "Equipment Maintenance Log (Consolidated)" DA Form 2409, and is used for a variety of items that are generally less complex in design than those for which equipment log books are maintained. This log will be used to record much of the same type of maintenance data as is found in a log book but in less detail. It must also accompany the item when in use or maintenance is being performed.

The third type of log is bound book type, the "Army Parachute Log Record." This log is not new. It has been in use in the Army for a number of years and was adopted as part of the equipment records system.

These equipment logs provide a means for the mandatory recording of events during the life cycle of an item of equipment. The appropriate type of log will be initiated when an item first enters the Army's inventory from the manufacturer and will remain with the item until it is "washed out" of the inventory. Equipment logs are permanent "health" records of factual data and information pertaining to the equipment's complete history. The most important use of the logs is that they provide a ready, accurate means of determining the operational, or battle readiness of equipment and are specifically designed to assist commanders at all levels in determining this status.

The second "key" of the records system is the Equipment Inspection and Maintenance Worksheet (DA Form 2404). This form is an excellent example of standardization in the new records system. This is a simplified, multipurpose form which replaced some 35 similar, multipurpose forms that were required for the equipment in the hypothetical battle brigade mentioned earlier. Its application is designed to eliminate unessential maintenance, repairs and unwarranted removal of parts, and place the emphasis on detecting and correcting "true" deficiencies. It must be used in conjunction with the maintenance standards and procedures prescribed in the technical manual pertaining to the item of equipment being inspected. This worksheet will be used by equipment operators, maintenance personnel, and inspectors at all echelons for all inspections of items of equipment. It is the source document from which the initiation of all maintenance actions will stem.

The third "key" to the records system is the Maintenance Request (DA Form 2407). This form has standardized and simplified the method of requesting, recording, and reporting maintenance services and repairs. It replaces all of the old forms used to request work. It is similar to the old DA Form 811, Work Request and Job Order; however, this is where the similarity ends. The Maintenance Request provides a variety of valuable information that was previously lost to the Army's logistical system. It is a multicopy form that is typical of several of the forms used in the new records system, and provides an easy method of distributing the recorded information to all interested agencies in the Army. The purpose of the Maintenance Request is three fold: to request maintenance services, to submit recommendations for improving equipment or procedures, and to record and report maintenance services, repairs, and modifications accomplished. Its importance to the Equipment Records system makes it

mandatory that it be completed accurately and the copies distributed promptly to the appropriate command or agency.

One of the most important changes brought about by the DA Form 2407 is that it replaced all of the old forms and procedures used to submit unsatisfactory equipment reports. The form is simple and may be used by anyone, anytime, or any place to submit equipment improvement recommendations. The routing procedures have also been changed. The individual now mails the yellow copy (NIP Copy) directly to the National Maintenance Point. The National Maintenance Point will also acknowledge receipt of the recommendation.

The full value of data produced by the Army Equipment Records System and Procedures has not been realized yet, because the maintenance management system and procedures for data collection, processing, analysis, and the distribution of intelligence formulated has not been fully implemented. However, the Army Maintenance Management Procedures for Field Commands, as contained in TM 38-750-1, was implemented about 1 November 1962, within designated CONUS Army headquarters, installations, and organizations, on a pilot basis. The procedures prescribed in TM 38-750-1 are applicable to all organizations and commands up to, and including, TOE combat divisions, CONUS Army installations, and overseas logistical, area, and/or support commands. The implementation of these procedures is optional for major commands other than those designated for pilot implementation until on/or about 1 January 1964, then it will be mandatory Army-wide.

The objectives of this system are to provide commanders with information necessary for the evaluation of equipment status and materiel readiness, effectiveness of maintenance operations, adequacy of resources, and support requirements. It will further provide the commander data in balanced combinations necessary for arriving at sound planning, programming, and decisions.

The Maintenance Procedures at the National Agency level are contained in TM 38-750-2. These Agencies will compile, analyze, and store data received from using unit level and field command level. This data can be used by commanders to evaluate readiness status, performance, and needs for resources. It will be used by Commodity Managers to identify inventories and plan procurement of parts and major end items. Feed-back data will also be provided for the using unit and field command levels of the maintenance management system.

"Operation Arm" (Army Ready Materiel) is the overall Department of the Army program for the Integrated Equipment Record Maintenance Management System from the operational level through national level. The ultimate goal of "Operation Arm" is to create a combat effective ready force.

The publications pertaining to maintenance are also being changed. The five-part technical manuals, with each part pertaining to one of the five echelons of maintenance, is a major improvement. The numbering system used identifies it with the echelon or echelons of maintenance to which it applies. For example: TM 9-2320-218-10 is the number of the First Echelon or Part I of the technical manual for the Truck, Utility, 1/4-ton, 4x4, M-151. The last two digits of the numbers of Technical Manuals, Technical Bulletins, Lubrication Orders, and Modification Work Orders indicates what echelon of maintenance has responsibility for complying with the instruction in that publication. In case the publication pertains to more than one echelon the last two digits will be - 12, - 34, or - 45, depending upon the echelons to which it applies. The numbers of Technical Bulletins and Modification Work Orders (MWOs) will also indicate the sequence number of these publications. For example: TB 9-2320-218-10/2 indicates this is the second TB published on the Truck, Utility, 1/4-ton, 4x4, M-151. The sequence numbers for MWOs are shown in the same manner. The last digit of the TM number of the repair parts technical manual will be followed by the letter "P."

As stated previously, maintenance is the key to keeping equipment combat ready. Organizational maintenance is the keystone of the Army Maintenance System. Command emphasis on the proper performance of maintenance must start at the lowest echelon and continue on up through the chain of command in order to insure combat readiness of all equipment.

The importance of preventive maintenance cannot be overemphasized, particularly first echelon preventive maintenance services that must be performed by the operator or crew each day the equipment is operated. The services performed at first echelon level are considered the "backbone" of the maintenance system. This is where early detection and correction of deficiencies or shortcomings pays off by preventing the development of failures that result in costly and time consuming repairs, plus the loss of equipment services. The operator or crew is limited to the performance of first echelon maintenance only, because of his limited technical knowledge and tools.

Second echelon maintenance is performed by trained maintenance personnel organic to the unit. The mechanic takes over where the operator or crew responsibility ends. The second echelon maintenance personnel will perform the scheduled maintenance service and any unscheduled services as required. The frequency of second echelon services for wheeled vehicles was recently changed from "quarterly" to "semiannually." The operator or crew will accompany the vehicle and assist the mechanic in performing these services.

The required forms and records must be completed by both first and second echelon personnel as appropriate. These records are extremely important because the maintenance services and repairs performed at organizational level provides the bulk of the data for the maintenance management system.

Organizational maintenance personnel do not have the capability to perform all maintenance, and must be provided backup support for maintenance which is beyond their capability. This support is provided by the Maintenance Battalion of the Division Support Command of the ROAD divisions. The organic units of the Maintenance Battalion are a Headquarters and Main Support Company, Transportation Aircraft Maintenance Company, and three Forward Support Companies. The Maintenance Battalion provides maintenance and maintenance supply support of all division materiel (except medical, cryptographic, electrical accounting machine, and quarter-master-air equipment).

The battalion is normally employed with one Forward Support Company placed in support of each brigade. The Forward Support Companies will normally be located in the brigade trains area. Augmentation of the Forward Support companies is provided by attaching additional mechanical maintenance sections from the Main Support Company as required. The Forward Support Company provides maintenance and maintenance supply support for Engineer, Ordnance, and Signal equipment (except cryptographic) for all elements in the brigade area. The emphasis is placed on the performance of maintenance as far forward as possible. The Main Support Company operates in the division support area and provides maintenance and maintenance supply support to those elements in the division support area not supported by the Forward Support Companies. It also maintains a maintenance float of selected end items for direct exchange with divisional units. In addition to providing additional personnel as required to the Forward Support Companies, it also provides backup maintenance support which is beyond the capabilities of a Forward Support Company.

The Maintenance Battalion is an example of the new concept of consolidating maintenance and maintenance supply support activities under a single commander. This concept is also applicable throughout the Division Support Command. This same concept for reorganization of the combat service support structure for the field army has been under study since 1961. It is known as CO-STAR II - (Combat Service to the Army).

A discussion of maintenance and maintenance management would not be complete without discussing the types of inspections conducted to determine the efficiency of maintenance, maintenance operations, and equipment serviceability. Inspections are not conducted just to harass the troops. Each inspection has specific objectives. Generally speaking, maintenance inspections are conducted to determine the serviceability of equipment and the effectiveness of maintenance operations.

The Command Maintenance Management Inspection (CMMI) is prescribed by AR 750-8. It was formerly the Command Materiel Readiness Inspection (CMRI) and is still referred to in some major command directives as such, but the procedures used are the same as for the CMMI. The CMMI eliminated the separate inspections conducted by each technical service and grouped them all into this one inspection. The CMMI is normally conducted annually for all units except in the case of small or isolated units and activities. These units and activities will be inspected a minimum of once every two years. The commanders of major commands are responsible for the performance of the CMMI. This enables the commander to have a more direct influence on the state of materiel readiness within his command. This responsibility may be delegated down to division, installation, or comparable commanders, but not below this level to insure more uniform inspections throughout the command.

Inspection teams will be composed of personnel who are fully qualified in the technical area in which they will inspect. Inspection teams may be established on a permanent or temporary basis from the personnel resources of the command. Permanent teams are preferable because they provide a more uniform inspection and afford minimum disruption of organizations providing inspection personnel. Permanent teams are considered appropriate only when inspections are conducted year round. It is desirable that the team chief be senior in rank to the commander of the unit or activity being inspected.

The CMMI is normally scheduled for highest command echelon having complete second echelon maintenance responsibility with all subordinate elements scheduled simultaneously. Separate reports are prepared for first and second echelon maintenance.

Four hours advance notice to the unit is considered adequate for most active Army TOE units. Experience has shown that inspections announced too far in advance do not provide a realistic evaluation of the maintenance situation. It will also cause a fluctuating maintenance cycle just prior to inspection with peak workloads at both organizational and field maintenance level. When practicable the CMMI may be conducted concurrently with other inspections. However, the detrimental effects, because of loss of surprise, must be considered.

The CMMI is designed to provide commanders with an indication of operational efficiency of each subordinate unit and activity and to measure the proficiency and effectiveness of organizational and field maintenance support of each unit or activity.

The materiel portion of the inspection will be conducted based on a random sampling of major equipment items and will include on equipment materiel (OEM), required publications and necessary maintenance records. The number of items to be inspected is based on a minimum sample size as shown in paragraph 37, AR 750-8.

The Equipment Inspection and Maintenance Worksheet (DA Form 2404) will be used to record any deficiencies or shortcomings found during the inspection. Upon completion of the inspection, the team commander will have deficiencies and shortcomings recorded on DA Forms 2404, applicable to equipment listed in Appendixes II and III, TM 38-750, transcribed to DA Forms 2408-3-1, Equipment Maintenance Record (Organizational) and will prepare a narrative report of the inspection and conduct a critique prior to the transmission of the report. During the critique the rating for the unit or activity should be announced. The rating will be Satisfactory or Unsatisfactory.

The Technical Inspection (TI) is conducted by technically qualified personnel when equipment enters field maintenance shops for repair and again when repairs have been completed.

The commander having field maintenance responsibility is responsible for the conduct of the inspection. The purpose of the inspection is to determine the condition of the item, and the man hours, repair parts, and cost required to restore it to a serviceable condition. The Maintenance Request, DA Form 2407, is used to record the results of the inspection.

This inspection should not be confused with the old technical service inspections mentioned earlier that are now included in the CMMI.

The procedures for conducting the Technical Inspection are contained in AR 750-5 and FM 9-30.

Another type of inspection that is conducted by commanders having field maintenance responsibility is the Spot Check Inspection. It is not specifically prescribed by any regulation but is still conducted at many installations. It is a valuable tool for the commander to use to keep a close check on the status of organizational maintenance of his subordinate units. It is normally conducted by technically qualified personnel from field maintenance units while vehicles are on dispatch. The vehicle will be inspected and released with a minimum delay. The results of the inspection will be recorded on DA Form 2404 and copies furnished the commander ordering the inspection and the commander of the unit owning the vehicle.

The Command Inspection is the inspection conducted most frequently at battalion and company or battery level. This inspection is the commander's tool to use as he sees fit. There are two types of Command Inspections, the Formal and Informal.

Informal Command Inspections are conducted in conjunction with the commander's other duties as frequently as he desires. No advance notice is given as to when, where, or what he will inspect. Since it is unannounced it gives the commander firsthand knowledge of the day-to-day status of his equipment. It will not give the commander the complete maintenance picture but it will give him a good indication of its status.

On-the-spot corrections should be made if possible. If there are deficiencies or shortcomings which cannot be corrected then and there, he should follow through and make sure they are corrected as soon as possible.

The Informal Inspection is a valuable tool to use to fill the gaps between or determine the frequency of Formal Command Inspections and to outline and correct major trouble areas.

Formal Command Inspections are also conducted as frequently as the commander deems it necessary. However, they should be held to a minimum because of the disrupting effect in the inspected unit and the time require to prepare for the inspection.

Normally the units to be inspected are notified well in advance. The amount of advance notice will be determined by the commander ordering the inspection. He should consider what the unit to be inspected is currently doing, what it has been doing, and its planned activities immediately following the inspection before he arrives at his decision as to the advance notice to be given.

The inspection should be announced in a written directive giving the complete details for the inspection. This should include: the units to be inspected, time and place, sequence, uniform, equipment display (normally included in the unit SOP) and the time, place, and personnel to attend the pre-inspection briefing.

The commander will normally have teams to assist him in making the detailed inspection. It would generally be almost impossible for a commander to make a complete and detailed inspection alone. The unit staff and special staff will normally conduct the detailed inspection in their area of responsibility and the commander will only make a general inspection of the major areas.

A Formal Inspection is the most effective method of bringing the maintenance standards up in all areas and units simultaneously.

Many officers are reluctant to make an inspection of a vehicle, primarily because they have the impression that it requires a great deal of technical knowledge. This is not true. Any competent officer can make a valid inspection with very little technical knowledge using the Preventive Maintenance Indicator (PMI) technique of inspecting.

There are 9 basic PM Indicator checks that are applied in inspecting any type of equipment. These 9 PM Indicators are: Performance, Leaks, Noises, Lubrication, Adjustment, Loose or Missing Parts, Cracked or Broken Parts, Damage or Abuse, and Cleanliness. These simple checks can be applied during the inspection of the most simple or most complex item of equipment. In some instances all of them will not apply. If one or more do not apply, just forget them and use those that are applicable. Do not attempt to make a diagnosis of its performance; leave this job to personnel who are trained to do it. Simply tell the technician something is wrong and let him determine the cause. With a minimum of practice and a knowledge of this inspection technique anyone can make a good inspection.

The emphasis on maintenance and maintenance management has been greatly increased in the last few years and will continue to increase for many years. Maintenance management is a term that will be heard with ever increasing frequency throughout the Army. The critical need for complete materiel readiness is one of the most serious problems facing our Army today. This is not a problem for only a few, it is everybody's problem. To attain this goal will require command emphasis and wholehearted support from every member of the Army establishment. It can and must be done.

CHAPTER 7

RANGER DEPARTMENT PRESENTATIONS

SECTION I. RANGER ORIENTATION

2d Lieutenant David L. Davis
Instructor, Ranger Department

The purpose of this orientation is to acquaint you with certain aspects of the Ranger Course of instruction.

The history of the Army Ranger is a long and colorful one. Rangers have a proud heritage that dates back over 250 years to the early American colonies. Ranger techniques and methods of operation were an inherent characteristic of our early frontiersmen. By the year 1700 parties of these frontiersmen, called Rangers, were patrolling the frontier from New England to the Carolinas in defense against Indians. Probably the most famous and most successful of these early units was "Rogers' Rangers," organized in 1756 by Robert Rogers. In all, over 400 Ranger units have existed in North America under such leaders as Morgan, Mosby, and Darby, all of whom contributed in part to this proud heritage. With the exception of the Spanish American War and World War I, we have had Ranger units in operation throughout our military history. For example, during World War II we had Ranger Infantry Battalions operating in the Mediterranean, at Normandy, and in the Southwest Pacific. The concept during the Korean conflict was that of Ranger Infantry Companies (Airborne). Volunteers were trained here at Fort Benning under what was then the Ranger Training Command. Six of these companies saw combat in Korea.

However, in 1951 the Department of the Army directed that Ranger training be extended to all combat units--and further, that Ranger training be placed on an individual, rather than a unit basis. This was a two-fold mission. First, that all combat units conduct Ranger training, and second, that the Commandant, US Army Infantry School, select a Ranger cadre for the purpose of conducting a Ranger Course of instruction. In 1954 it was further directed that all Regular Army second lieutenants of the combat arms select and attend either Ranger or Airborne training.

The Ranger Course covers a period of nine weeks, during which time we present 838 hours of instruction, most of which are devoted to night training. The course is divided into three phases. A preparatory phase of three weeks at Fort Benning, physically and mentally hardens the student and develops the basic combat skills. These skills include hand-to-hand combat, bayonet, demolitions, tactical survival and aerial resupply. The second phase of training is conducted at the Ranger Mountain Camp located in the Blue Ridge Mountains of northeast Georgia. Here for three weeks of rugged training the student conducts raids, ambushes, and long-range patrols. He is also taught the various mountaineering techniques he will need to accomplish his missions. For the third phase of training the class moves to the Ranger Jungle, Swamp, and Waterborne Camp located on Eglin AFB, in northwest Florida. Here in his final three weeks the student is taught survival, conducts jungle and swamp operations, and participates in both air-mobile and waterborne raids. During all three phases of training the student is exposed to 17 graded problems, three of which are waterborne and three of which are air landed. The patrol is employed as the teaching vehicle and these vary in size from a five man reconnaissance patrol to a platoon size raiding party. They vary in time from several hours to 96 hours and in distance from several thousand meters to 50 miles. The student gets very little sleep--averaging three to five hours of sleep per night.

Each patrol is accompanied and closely observed by a Ranger officer or Ranger noncommissioned officer. An Aggressor enemy harasses the patrol, forcing the students into difficult situations which require prompt, yet sound decisions. Upon return, each patrol is critiqued in detail by this Ranger instructor, thus allowing the student an excellent opportunity for selfevaluation and selfanalysis. It is through training such as this that a combat leader is developed, who is physically and mentally capable of sustained action on the modern battlefield or in counter-guerrilla warfare, and one who can be depended upon to continually exert his influence, regardless of time, place, or circumstances.

Our training is realistic, tough, and to a degree, hazardous--the closest approach to combat conditions that can be achieved in a peacetime Army. The number and variety of situations faced by the Ranger student have been compared to those that a soldier faces in two or three campaigns in battle.

In summary, the Ranger Course is the highest form of combat conditioning in the Army today. It develops the overall combat potential of the individual to a greater degree than any other course in the Army. It is of benefit to any man, regardless of branch, rank, or service. An individual in the Ranger Course gains an insight into himself and his fellow man. He develops selfdiscipline. Men who make excellent tactical decisions in the classroom and in normal training programs sometimes fail miserably under the stress of uncomfortable field conditions. Hunger, fatigue, and the pressure of combat itself uncover weaknesses an individual never knew he had. Men under such conditions often lose their poise, their self-confidence, their sense of direction, their equipment, and worst of all, control of the men they may be leading. The Ranger Course "combat conditions" the students to the hazards of weather, terrain, and the enemy. As one student expressed it, "Ranger training is the best insurance I've ever taken."

We will now demonstrate some of the highlights of the Ranger Course of instruction.

HAND-TO-HAND COMBAT DEMONSTRATION

The average soldier, if trained only in the use of his basic weapon, loses his effectiveness if his weapon fails to fire or if he should lose or break it. But with a knowledge of hand-to-hand combat and the confidence and aggressiveness to fight hand-to-hand, the Ranger is able to attack and dispose of his opponent. We teach hand-to-hand combat for several reasons. First, hand-to-hand combat is an excellent physical conditioner and body toughener. Secondly, it builds a spirit of aggressiveness in the individual soldier and instills the will to fight. Third, it instills confidence in the student's ability and that of his fellow Rangers. Fourth, hand-to-hand combat teaches the Ranger techniques of fighting or defending himself when unarmed and confronted with an armed opponent. And finally, our instruction in hand-to-hand combat provides a basis for the Ranger student to properly set up training in hand-to-hand combat when he returns to his unit.

Now there are several fundamentals that we stress in our hand-to-hand combat training. The first of these is the use of your opponent's momentum to your advantage.

We teach the student not to match his strength against that of his opponent, but to set his opponent in motion so that he can use the fundamental of momentum. Secondly, we stress the use of maximum strength against maximum weakness. You will note that the Ranger uses his hand, arm, and body against his opponent's weakest point--the wrist.

Third, we stress the use of any and all available weapons. The Ranger student learns that there are no rules in hand-to-hand combat. He is taught to use whatever means are available to kill or maim his opponent. If the Ranger has nothing but his hands, he is far from defenseless. You will note that every throw, hold, or takedown is followed by a killing blow with the

hand or foot. Next, we stress a good balance position - a modified boxer's crouch. Weight is evenly distributed over the body; hands are carried high to protect the face, to deliver a sharp killing blow, or to execute a throw or takedown. This is the Ranger's physical balance or "on guard" position.

We also encourage the Ranger student to use the growl, because it upsets his opponent's mental balance, immediately puts him on the defensive, and allows the Ranger to gain a mental advantage. A final fundamental that we encourage the Ranger to develop is accuracy and speed. With emphasis on the fundamentals, the student will develop accuracy. Speed will come with practice.

Through the Fort Benning phase of training, the Ranger student is taught throws, takedowns, counters, and holds. We will now demonstrate several of the throws that we teach. (Figure 1)



Figure 1. Execution of a reverse hip throw during hand-to-hand combat demonstration.

First, the reverse hip throw. You will notice that after each throw the demonstrator follows through with disabling blows and kicks, the objective being to keep his opponent down once he is thrown. Another momentum throw is the overhead throw.

We also teach the Ranger a series of takedowns. These are simple methods of tripping-up an opponent, and include the cross-hock takedown, a front leg takedown, and a rear strangle take-down. (Figure 2)

You will note that the opponent ends up in a very vulnerable position. We also teach a series of counters to various holds. These counters are to enable the Ranger to return from the defensive to the offensive. (Figure 3)

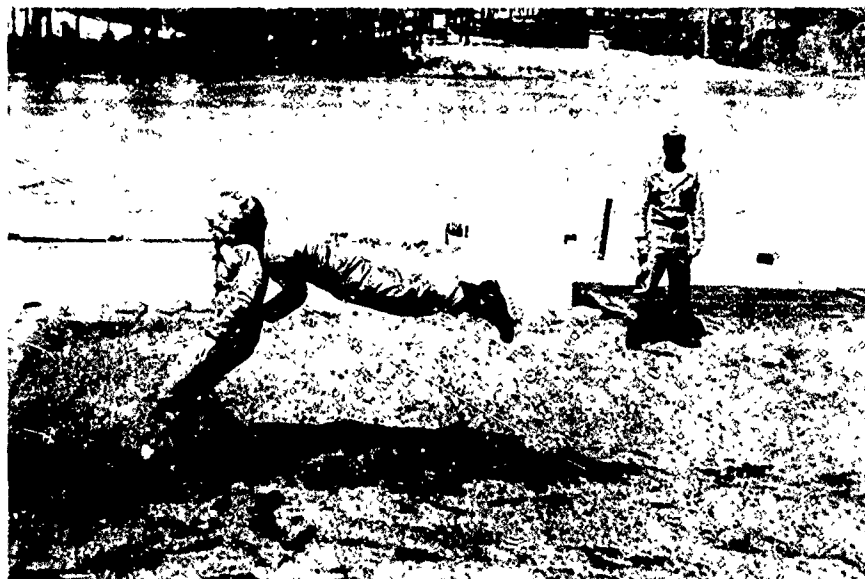


Figure 2. Execution of a rear strangle take-down in silencing a sentry during hand-to-hand combat demonstration.



Figure 3. Counter to the full nelson in hand-to-hand combat.

In the event the Ranger should find himself confronted with an enemy armed with a knife and he himself is unarmed, we teach him a series of knife disarming counters. The first of these is the counter to the downward stroke of the knife. You will note that in each case the Ranger makes his opponent drop the knife. During his training, the Ranger is also taught methods of knife fighting; how to hold the knife, the knife fighter's stance, a modified stance, and the vulnerable points - where to strike an opponent to kill him.

Since the rifle with bayonet is the weapon that Rangers are most likely to encounter on the battlefield, we teach the Ranger student techniques for bayonet disarming. Since Ranger operations are conducted behind enemy lines, frequently the Ranger will be confronted with the necessity of silencing an armed sentry. One method for doing this is the rear strangle takedown. By maintaining pressure, the Ranger will either break the sentry's neck or strangle him.

The training of a bayonet fighter should be varied to keep up his interest and enthusiasm. For this reason, the Ranger Department has adopted the pugil stick. The pugil stick is an excellent training device since it allows the Ranger to develop his skill against a live opponent.

The weight and length of the pugil stick approximates that of the M-14 rifle with bayonet attached. One end of the stick is marked "butt" and the other is marked "blade." The movements with the pugil stick are executed in the same manner as with the rifle. We teach with competitive bouts. To do this, the students are broken down into three-man groups. Two are contestants and the third man acts as referee.



Figure 4. Three-man pugil bout in bayonet training.

Each bout lasts three rounds and in order to score a point or win a round, a contestant must score a solid blow with either end of the pugil stick to a vulnerable point, as the head, the throat,

the chest, stomach, or groin region. To commence the bout, the referee commands the contestants to face each other, take three paces to the rear, and draw their lines. This line serves two purposes. First, it outlines the area in which the bout is to be conducted; secondly, it forces the nonaggressive student to stand and fight rather than withdraw over a physical boundary and lose the bout. To start the bout, the referee commands "On Guard." Once a point is scored, the referee commands "Point, Recover," and then continues with the next round.

To further develop skill and teamwork, we teach the Ranger how to fight independently and then as a team. When fighting alone and faced by two opponents, the Ranger will engage only one man at a time so that he may successfully dispose of both.

When fighting as a team and opposed by one opponent, both Rangers will move directly in on the opponent, one Ranger attacking directly from the rear. Another technique of individual fighting for the Ranger is how to disarm an opponent armed with a pistol, either to his front or rear. (Figure 4)

Hand-to-hand combat teaches the Ranger to be alert and aggressive; to have confidence in his ability to close with an enemy and regardless of circumstances to overcome that enemy.

SURVIVAL AND REPTILE DEMONSTRATION

Rangers may be called on to fight anywhere, any time, and under any situation. They may often find themselves far behind enemy lines where resupply is impossible. Because of this, survival is a vital essential in Ranger training, and the Ranger receives this instruction early in the course. We teach the Ranger how to make nature provide for him, so that he can live off the fat of the land and exist in the wilderness, many times with nothing more than his bare hands as his only tools and weapons.

Ranger facilities are ideal for the application of survival training. In our 400,000 acres of training area we have jungle-like swamps, tropical rivers, coastal beaches, and off-shore islands in Florida. The mountain camp provides rugged mountains, ravines, cliffs, and clear mountain streams. Both areas are virtually isolated and uninhabited. Some areas are almost primeval in the nature of wildlife and vegetation they contain.

Our survival course and these facilities give the Ranger a survival potential applicable to almost any part of the world.

Nature has provided us with over 300,000 different forms of plant life. More than 90% of these can be used for survival purposes.

The pine tree, as an example, is one of the most common trees in the world. It has a wealth of survival treasures that are unknown to the untrained. For example--

1. Limbs and leaves for making shelters.
2. Needles produce a stimulating tea when boiled in water.
3. Pine nuts edible when roasted--gathered in the fall.
4. Pine shoots, in the spring, and the white, inner bark, found the year around, are edible. They have a slight turpentine taste, but are nutritious and rich in Vitamin C.
5. The burning heart wood of a pine tree limb provides an excellent torch.
6. Pine smoke will drive troublesome insects from your camp site and clothing.

We have another area of principal concern. Turtles and alligators are members of the reptile family, but most people think of nothing but the slick, slimy, sneaky snake when the word "reptile" is mentioned. Many people are overcome with a childish fear and panic at the mere sight of a snake. This, of course, cannot be a characteristic of a Ranger. Particularly when he trains in a combination of areas that contain 80% of the reptile species in North America, and all four of the poisonous snakes. Because of these dangerous reptiles, we teach the Ranger how to identify them, how to avoid them, and what to do if accidentally bitten. The reptiles are defensive and beneficial to mankind. They should be respected rather than feared. To further this understanding, each Ranger must hold, handle, and examine a non-poisonous snake. The Rangers must be prepared to meet reptiles anywhere and any time. Reptiles are easily caught, and considered a principal source of survival food.

I have here some common representatives of the reptile family this morning. The following are characteristics of the Alligator Snapping Turtle:

1. The largest fresh water turtle in North America.
2. The record weight is well over 200 pounds. Found in swamps, streams, and pools where he lives on fish and the carcasses of dead animals.
3. With this massive jaw he can easily crush and bite through a 1/2-inch board, boat paddle, wrist, or ankle.
4. Like all other reptiles, he is a coward and will run.
5. Now bear in mind that all reptiles are edible. We actually feed the Rangers a typical survival meal consisting of such things as turtle soup, Bar-B-Qued alligator, fried water moccasin, and rattle snake.

Although alligators are slowly disappearing in the United States, they are still numerous in the Florida area. They are closely linked with their cousins of the dinosaur age, and have retained the thick, tough, plated skin. They, too, are cowards, but can be dangerous from either end when molested.

Picture this four foot tail with its 35 or 40 joints and its massive muscle that can sweep it to either side with enough force to knock a man down. These large jaws can be held closed with the fingers and thumb of one hand, but once opened, they can slowly close with enough power to completely imbed the teeth into a hard wooden log. Both the tail and mouth are used to fight foes and capture food. Power, speed, and coordination are in this sluggish, fat body. The last reptile that I will show you is a member of the snake family. This is that dreaded and feared Eastern Diamondback Rattle Snake. It is the largest poisonous snake in North America, with a maximum length of over 8 feet, and is listed as the 10th deadliest snake in the world. It will strike with deadly accuracy for a distance of half its body length, and with a speed of 8 feet per second. It is commonly thought that the rattler must coil and rattle before striking, but this is not necessary. Despite his vicious and dangerous appearance, he too is defensive and will usually run away and hide.

MILITARY MOUNTAINEERING DEMONSTRATION

Rappelling is an integral part of mountaineering instruction given during the course. It is the technique of descending a vertical surface by means of artificial devices, and is taught in the Ranger course for several reasons. First, it helps the student overcome an inherent fear of height. Secondly, it builds confidence in the individual; and thirdly, it teaches the Ranger an additional military skill. These techniques are extremely valuable in both conventional mountain warfare and counter guerrilla operations. He learns again that there is virtually no impassable terrain for determined, well trained, and well led soldiers.

The Seat Hip rappel is the type of rappel most often used by professional mountaineers. (Figure 5)

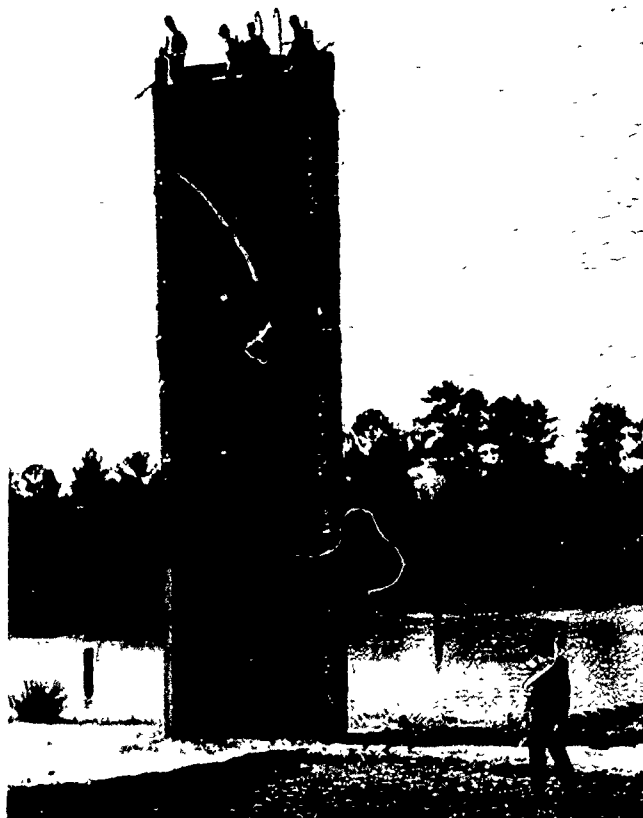


Figure 5. Demonstration of seat hip rappel.

In order to execute the Seat Hip rappel, certain items of mountaineering equipment are essential. First the nylon climbing rope. This rope is made of 100% nylon, has a tensile strength of 4000 pounds, when new, and is 120 feet in length. Another amazing characteristic of this rope is its elasticity. It will stretch one-third of its normal length prior to breaking. A second essential item is the utility rope. This rope has the same characteristics as the nylon climbing rope except that it is approximately twelve feet in length. A third item, the snaplink, is made of steel and has a spring loaded gate. This snaplink has a tensile strength of 2,000 pounds when the gate is closed. Also heavy leather work gloves are worn to prevent burning of the hands.

To get into the rappel seat, the Ranger adjusts the utility rope around his waist and an overhand knot is tied. The ends are placed between the legs without crossing and brought up around the waist and then tied off over his left hip using a square knot with the ends half-hitched. The snaplink is passed through the ropes at the waist with the gate up and away from the user. The Ranger then puts on heavy leather work gloves. He then faces the nylon climbing rope with the anchor point on his left and runs the climbing rope down through the snaplink. He takes the slack between the snaplink and the anchor point and runs the rope under and back through the snaplink a second time. To descend, the Ranger faces the anchor point and merely walks backwards down the cliff. The Ranger may desire to stop during his descent. For this, he applies his "brake," that is, he tightens his right hand around the rope, for it supports his weight and controls his rate of descent. The left hand is merely a balancing or stabilizing agent. To continue, he releases the grip of his right hand and proceeds down.

In many cases it will be necessary to haul personnel or equipment up a vertical surface. For such a purpose the Ranger student is taught the use of the vertical haul line. It consists of a heavy "A" frame constructed and lashed together at the top of the cliff with sufficient climbing rope to reach the bottom. The ends of the climbing rope run through a pulley or snaplink at the apex of the frame and are tied together, creating what is known as an "endless" rope. At opposite extremes in this rope are tied two butterfly knots. The Ranger engages his snaplink with a butterfly knot and climbs a knotted rope, also extended down from the "A" frame. He is assisted by the men at the bottom who pull the "endless" rope. Another butterfly knot moves down where the second man hooks up and climbs to the top.

A second type of rappel is the body rappel. The body rappel is suitable for descending over relatively short distances. You will note that the Ranger proceeds down by taking short side steps to his right. The left hand does not support or hold the Ranger's weight, but serves only as a guide hand to stabilize his descent. The right hand controls the rate of descent and the braking procedure is different from that of the seat hip rappel. If the Ranger must stop during his descent, the arm is thrown up diagonally across the chest, creating the "brake" effect. When he is ready to continue he extends his right hand and proceeds down. He plays the rope through the fingers of his leading hand to prevent the rope from knotting. His upper arm does not support his weight, but merely stabilizes his descent. You will note that the descent is rather slow. Again this is understandable when you consider the amount of rope friction on his body. The nylon rope is termed a "hot rope" by virtue of the extreme amount of friction generated between the rope and clothing. For this reason padding should be worn by the Ranger when using the body rappel.

Another type of rappel used by the Ranger is the seat shoulder rappel. This rappel is used when the individual is carrying a heavy load on his back, such as boxes of ammunition, a machine gun or, in this case, a five-gallon can of water. You will note that the climbing rope is passed over his shoulder and across the top of the packboard, thus allowing for the heavy load and the change in the center of gravity. This particular rappel prevents the Ranger from toppling over backward due to the load he might be carrying.

A technique for evacuating seriously wounded or litter cases is also taught the Ranger student in his mountain phase of training. Evacuating a wounded soldier down a vertical surface is extremely serious and requires exceptional teamwork.

The wounded individual is secured to the litter by the use of nylon utility ropes. Two saplings of approximately eight to ten feet in length are cut and attached to the stretcher to prevent cutting by jagged rock edges. The team moves down, one on each side of the litter, with both in a position to administer to the patient. A belay rope attached to the litter controls the stretcher's rate of descent; the rope is belayed by an individual at the top of the cliff. On the command "Tension," belay of the stretcher is stopped, the rappelling team may tie off if necessary and may take a short respite or administer to the wounded man. On the command "Slack," the rope is belayed slowly and movement down the cliff continues. As the team touches down, tension is again taken on the belay ropes as the two Rangers free themselves from the climbing rope. On the command "Slack All The Way" the belay rope is released and the litter patient is evacuated from the cliff.

The Ranger student also learns the proper techniques of military rock climbing, in addition to the expedients and rappels that you have observed. These climbing techniques include free or balance climbing, rope or party climbing, and tension climbing.

In the event a soldier is lightly wounded and a stretcher is not available, another technique of evacuation is taught the Ranger student. This method is called the piggy-back evacuation.

The patient is secured to the Ranger by means of a utility rope and as the term implies, rides piggy back fashion down the face of the cliff. The Ranger is using the Seat Hip rappel. A belay line extends from the patient to the top of the tower; however, the belayer does not control the rate of descent in this case. The belay line is used to arrest movement if an emergency develops.

You'll recall the Ranger commanded "On Rappel" before descending and "Off Rappel" after touching down and clearing his rope. The term "on rappel" signifies that he is about to descend and for anyone below to be on the lookout for falling debris or rocks. The term "off rappel" means that the Ranger has touched down, that his climbing rope is clear and that the next man may descend.

To show you the technique and the degree of proficiency a Ranger may attain in rappelling, we will demonstrate the method initially taught the Ranger student and then the final result. (Figure 6)

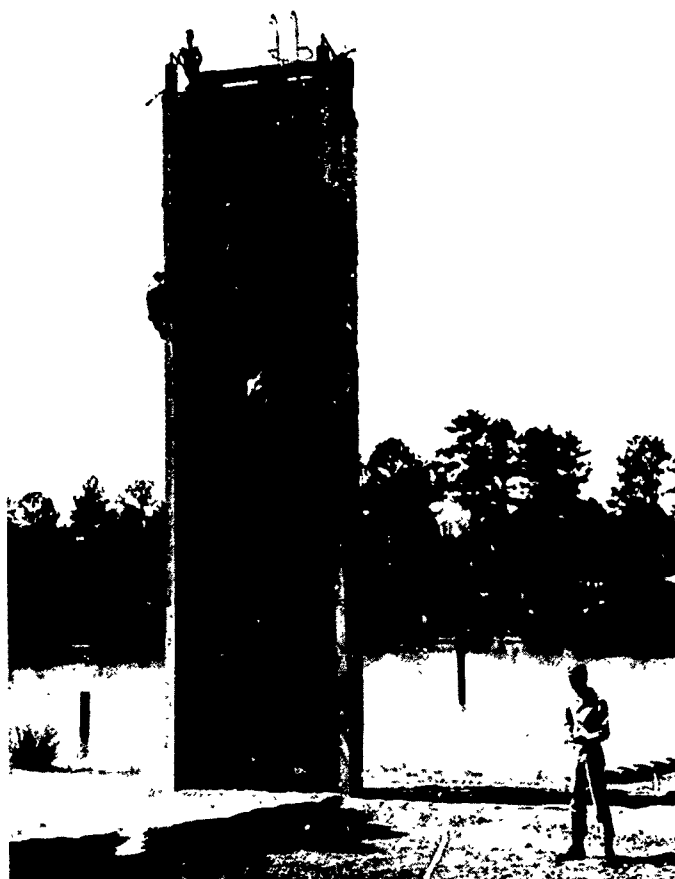


Figure 6. Demonstration of eventual skill that the student can acquire in rappelling through practice. Demonstrator on the left is moving all the way to the bottom of the tower in one leap, while demonstrator representing the beginner, has already stopped halfway down and is making his second bound.

To gain confidence in himself and his climbing equipment, the Ranger student is taught to lean back off the lip of the cliff and keeping his feet flat against the surface, to walk down very slowly. Here, he checks his equipment and develops his self confidence. With experience the Ranger gains confidence in his ability and his equipment and is capable of making a more speedy descent.

RANGER ORIENTATION CONFIDENCE TEST

A soldier, in combat, fights four battles: the weather, the terrain, the enemy, and himself. In the Ranger course, we place students in situations and on terrain that will tax their capabilities to the maximum and which will require their fighting these four battles in order to accomplish the assigned mission. The student must operate effectively in all types of weather and over the most difficult terrain available. In addition, he is constantly harassed by an aggressor enemy - an enemy whose tactics and techniques approximate those of an actual enemy. In spite of all this, however, we feel that this fight within himself - this fear of being afraid, which every soldier faces in combat - is lacking to a degree. To inject this element of fear, the Ranger Department has developed special tests. These tests are a prerequisite to the successful completion of the Ranger course.

The first of these tests is the Rope Drop which you will see to your near right front.

The student climbs the vertical pole to the horizontal log walk, located thirty-five feet above the water; crosses the log walk, encountering the obstacle along the way; climbs the diagonal rope to the horizontal rope; monkey crawls to the Ranger Tab, which he must touch; and, on command, drops forty-five feet into the water.

The second of these tests is the Suspension Traverse, which you will see to your far right front.

The student climbs the vertical "I" beam structure to the platform, located seventy-five feet above the water; hooks a pulley to the steel cable; slides down the cable; and, on command, drops into the water.

If you will direct your attention to your far left front, you will see a patrol in boats approaching the shore.

This patrol has been operating, for an extended period, against guerrillas. These boats are the inflatable, rubber, reconnaissance-type craft used extensively throughout the Ranger course for river crossings and waterborne operations.

The patrol consists of the following:

The patrol leader, whose duties are: to accomplish the mission and all tasks assigned to him by higher headquarters. To aid him in the accomplishment of his mission we have the assistant patrol leader. Both the patrol leader and his assistant are armed with the M-14 rifle and are equipped with an AN/PRC-6 radio and binoculars, in addition to their normal equipment. Next we have the radio operator. He is equipped with an AN/PRC-10 radio for communication with higher headquarters. The machine-gunner and his assistant, armed with the M-60 machine-gun and a caliber .45 pistol, provide additional firepower to the patrol. One member of the patrol is designated as a demolitions man. He is equipped with plastic military explosives and all items of equipment necessary to prepare and detonate his charges. Finally, we have two riflemen, each armed with the M-14 rifle. Their duties are to scout and provide security for the patrol.

The uniform is that which is normally prescribed for patrol operations. Note the soft cap, which reduces noise when moving through brush, affords maximum hearing to the individual, and breaks the outline of the face. Their faces and hands have been blackened with camouflage paint, to blend into the shadows. There are no light colored or shiny objects anywhere on their person. The utility rope, a valuable piece of equipment for Ranger field operations, is secured about the waist. Their boots are of a soft, unpolished leather. Even the slings of their weapons have been taped to prevent chance of rattling or catching on brush.

Prior to execution of the confidence test a Ranger cadreman demonstrates the procedures to the Ranger students. These men are about to learn that there are no impossible obstacles. Rangers are required to report successful completion of the confidence test to the Assistant Instructor. Sometimes the Ranger is required to do push-ups because of improper execution of the test itself or because of incorrect reporting procedures. Army Engineers have estimated that Ranger students travel at approximately 50 miles per hour while executing the suspension traverse.

The end result of the Ranger Course is a superbly trained, tough, and confident leader--a man who has acquired the skills and stamina necessary to out-perform the Communist guerrilla and defeat him--a man who is master of ambush, raid, and short-or-long-range patrol. Upon graduation the Ranger returns to his parent unit fully qualified to organize and conduct Ranger training, thereby raising the level of training throughout the entire Army. Currently, US Army Rangers are training Vietnamese Ranger units which are actively engaged in combating the Viet Cong. The Ranger Course has graduated students from 40 different countries, many of which are now conducting their own Ranger training programs.

Remember, Ranger training develops selfconfidence, selfdiscipline, tactical know-how, and the ability to operate day or night over any type of terrain. Ranger training is a means whereby the United States Army develops the ultimate weapon - The Army Ranger.

SECTION II. NEW DEVELOPMENTS IN PHYSICAL TRAINING

CAPTAIN LARRY E. IVERS
CAPTAIN ARTHUR W. GARRETT

Instructors, Physical Training and Combatives Committee, Ranger Department

The Physical Training and Combatives Committee of the Ranger Department is responsible for all resident instruction in Physical Training, Hand-to-Hand Combat, and Bayonet at the United States Army Infantry School. In addition, the Ranger Department has Army-wide propensity for development of the Physical Fitness Program.

As Infantrymen, you have participated in physical training programs. Many of you have organized and conducted such training. As Infantry Instructors, you are vitally concerned with the physical readiness of our soldiers. You are the logical personnel to sell your students and your non-Infantry fellow faculty members on the need for men who are physically able to move to a battle zone and defeat our enemies with little or no extra preparation. Today, you will be briefed on the type of command emphasis required to attain and maintain physical fitness to include: emphasis on weight control; types of programs which contribute to the development of fitness; the means available to the individual to maintain fitness to include the new 6-12 Plan of Exercise; various tests of physical fitness authorized for Army use; physical fitness requirements for Service Schools; requirements for the maintenance of physical fitness records; and the results of the latest Army-wide survey of physical fitness.

The concern for the lack of physical fitness in the Army is nothing new. General Henry Knox, Secretary for the Department of War, complained in 1790 that our soldiers in the Revolution lacked physical stamina. Discussions on the need for conditioning our youth continued in official reports for the next 40 years. After a century and a half, it looks as if we are taking a sound approach toward solving the problem.

Department of the Army has directed commanders at all levels to place a high degree of command emphasis on the physical fitness of their personnel. Heretofore, one of the major problems in the field of physical fitness has been command emphasis. So often physical fitness programs are unsuccessful due to inadequate knowledge of their importance, or lack of command emphasis. There is now strong emphasis from the national level. The President's Council on Physical Fitness initiated it and this is followed within the Army by command emphasis from DA and USCONARC. Emphasis is evident by an analysis of DA TC 21-1, The Army Physical Fitness Program. This directive covers not only the physical training of units but also includes the physical conditioning of individuals, the athletic and recreational activities sponsored by Special Services, and the weight control program as administered by the Surgeon. The directive prescribes the following:

1. The commander will establish a strong educational program to stress physical fitness. An educational effort rather than merely a directed effort, must be made to inform all personnel as to the importance of, and the benefits to be derived from, proper physical fitness programs. Although personnel cannot be forced to enjoy PT, they should be educated to accept it as a necessity.
2. Every unit and individual in the Army establish and execute a physical exercise program. Those who must assume responsibility for these programs are individuals, the unit commanders, and the Special Service Officers.
3. Every individual regardless of age, sex, rank, or duty assignment will be tested semi-annually with the Physical Combat Proficiency Test or the Army Minimum Physical Fitness Test.

4. All personnel will maintain proper weight standards considering their age, body build, and bone size. The commander is responsible for detection of possible overweight personnel and the surgeon is responsible for the determination and prescription of corrective action.

5. Records will be maintained at the unit level of actual test results. These records will assist the commander in evaluating his unit's program and in meeting the reporting requirements or higher headquarters.

To fulfill the need for development and maintenance of physical fitness, TC 21-1 directs that exercise programs are to be used to fit the needs of all personnel. These programs consist of Unit Physical Training for TOE units and TD type units which have enough solidarity to physically train as a group. The time devoted to this training is specified in the ATPs. Also, individual programs of exercise or sport in which the individual follows a directed program, or a self-generated program.

One such program is the Canadian 5BX plan adopted by our Air Force. Another program has been developed by the Ranger Department, the 6-12 Plan. This plan fits any age group. It is composed of six tables. Each table contains six different exercises. Each exercise is designed to develop a specific muscle group, therefore, a complete table will develop the entire body, to include development of circulo-respiratory endurance. There are three levels of achievement. These levels are determined by a set number of repetitions that must be executed for each exercise. The entire table must be completed within a twelve minute time period in order for the individual to progress to the next level of achievement. The exercises become more difficult with each succeeding table.

The plan is highly practical in that it fits any age group, contains balance and variety, applies the principal of over-load in a safe, gradual manner, it can be executed indoors, no extra equipment is needed, and only 12 minutes of exercise are required each day in order to maintain good physical condition. If the 6-12 Plan proves effective here at Fort Benning, the Infantry School plans to recommend its dissemination throughout the Army.

For the first time in our Army's history, all active Army personnel are now required to take a physical fitness test administered semiannually. This will force those personnel, especially in sedentary jobs, to maintain themselves in reasonably good physical condition. Test results are now made a permanent part of the individual's records; these results could play an important part in an individual's career. To test physical fitness, the Army is currently using four tests: The Physical Combat Proficiency Test, the Army Minimum Physical Fitness Test-Male, the Army Minimum Physical Fitness Test-Female, and the Airborne Trainee Physical Fitness Test. We will explain only the first two.

Physical Combat Proficiency Test: Army male personnel under 40 years of age are required to take the Physical Combat Proficiency Test (PCPT) semiannually. The Physical Combat Proficiency Test has been in effect for two years and as most of you know, the test is composed of five events. It is planned to bring out points of sound administration in the interest of securing a valid measurement of the individual. Change 2, TM 21-200, is quite explicit in its instructions for giving the PCPT. However, from our observation, many discrepancies do exist when the test is administered in the field. These discrepancies will be pointed out in each event.

In the 40-Yard low Crawl, the manner of arm movement is immaterial, but the chest at all times, to include the turn around, must slide along the ground. If the man insists upon using a high crawl form, he will be stopped and sent to the rear of the line to rest and try again as part of a new order. The combat-ready standard for this event is 36 seconds. The fastest time we have recorded during the past year was 17 seconds. The worst time was 3 minutes and 19 seconds. For 100 points, you must crawl this event in 23 seconds.

In the Horizontal Ladder event, the man's weight must be suspended from a rung to get credit for it. He is not allowed to continue if he falls off after making the turn around at the far end of the ladder. If he falls off before reaching the first turn, he is allowed to run back to the starting point and start again. If he falls off the second time, he is finished. The combat-ready standard for this event is 36 rungs. For 100 points, you must traverse 76 rungs. Achieving maximum points for this event is not uncommon. One student traversed 76 rungs in 33 seconds.

On the Dodge Run and Jump, a man is not allowed to grasp the obstacles, nor is he allowed to step down into the ditch. The combat-ready fitness standard for this event is 26.5 seconds. The fastest time we have recorded during the past year was 19.5 seconds. The worst time was 35.5 seconds. For 100 points, you must run this event in 22 seconds.

The Grenade Throw event is administered well with the exception of two items. In some cases, the scorer does not call the value of the hit to the thrower. The other deficiency concerns inexact dimensions of the target. We have solved the latter by construction of targets made of heavy-duty target cloth with the circles painted on the canvas. The targets can be used, rolled up and stored until the next test. The combat ready standard for this event is 15 points. The best score we have had at this test location during the past year was 39 points. It is not uncommon for individuals to achieve 0 points because of poor coordination. For 100 points, you must score 36 out of a possible 40 raw points.

The final event of the test, the one-mile run, presents no administration problem if the system specified in the instructions is followed. In the testing of company size units, identifying numbers should be worn by each runner. The combat ready standard for this event is 8 minutes, 30 seconds. The fastest time recorded on this test location during the past year was 5 minutes, 15 seconds. The worst time was 13 minutes, 43 seconds. No credit is awarded for a time of more than 12 minutes, 29 seconds. For 100 points, you must run this event in 6 minutes, 2 seconds or less.

Individuals must meet certain general standards in order to pass. All five events must be completed, and an overall score of 300 points of a possible 500 points must be attained as the minimum standard. Certain standards must be met on each event in order to achieve the status of physical "combat readiness." Let us examine just what this means.

The Physical Combat Proficiency Test has enjoyed good reception throughout the Army. Thousands of men in training centers and TOE units have participated in the five-event battery. No element of the test has stirred as much discussion or controversy as the scoring system. To assist in interpretation of scores, several points are worthy of consideration.

The makers of the new test purposely advanced the minimum level from 200 points as required on the former Physical Fitness Test to 300 points on the new test. This action, therefore, fixed the minimum passing level at 300 of the possible 500 points or, putting it another way, at the 60 percent level. It must be realized that the passing mark of 300 points is not a high level of physical attainment but instead is the minimum level.

Other personnel are puzzled by the concentration of scores in the upper score brackets. Analysis of thousands of scores reveals that men who are in good physical condition will score above the 400 point level. One of the objectives during construction of the test was to reward the well conditioned men with a high score. If the 500-point scale is converted to a 100-point scale as used in most of our academic grading, 400 points are equal to 80 percent, which is not unduly high. It appears from experience that 500 points are attainable, yet there has been no "rash" of perfect scores.

At one installation, a highly trained and well conditioned company combat unit had 97

percent of their men achieve or exceed the 300-point score. There was some alarm because of the high qualification rate, yet a unit of this type should certainly qualify a high percentage at the 300-point level since such qualifications represents minimum physical fitness attainment. If an individual in such a unit can achieve combat ready standards in all five of the events, this is a more realistic measurement considering their state of training. The commander of a combat unit who can say 97 percent of his command achieved these standards can feel more secure about the physical combat readiness of his command. If your men can do well on the minimum fitness level, at your next test strive for combat ready standards -- that is the real test.

By analyzing the test results, a commander may determine the state of physical readiness within his command. A company's average test score is important but will not in itself determine combat ready fitness. Each test event must be averaged separately. A unit's remedial physical conditioning program should be based upon low test event performance; for example if, in the Low Crawl, the company average falls below the combat-ready fitness standard (36 seconds), the unit has poor endurance. A sample corrective program would include set drills and more supplementary activities such as grass drills and running. In the Horizontal Ladder, if the company average is below 36 rungs, the unit lacks strength in the shoulder girdle muscles and has poor coordination. A corrective program would include rifle drills and log exercises. If the company average is below 26.5 seconds in the Dodge Run and Jump, the unit lacks agility and coordination. A corrective program would include supplementary activities such as grass drill, mass games, and organized athletics which require the individuals to dodge, run, and jump. If the company average is below 15 points in the Grenade Throw, the unit lacks coordination. A corrective program would include mass games and organized athletics which involve throwing skills. If the company average is below 8 minutes, 30 seconds in the One-Mile Run, the unit is weak in endurance, both muscular and circulo-respiratory. A corrective program would include swimming, additional running, and speed marches.

The Army has an additional test which is given to personnel who do not take the PCPT. All Army male personnel over 40 years of age are required to take the Army Minimum Physical Fitness Test (AMPFT) semiannually.

ARMY MINIMUM PHYSICAL FITNESS TEST

This test involves no point system. To pass, you must complete the minimum number of repetitions within the allotted time for your age group. The age groups are as follows: 17-29, 30-39, 40-44, 45-49, 50-59, and 60 plus. Personnel under 40 years of age will take this test as a substitute only if PCPT facilities are not available.

The test is composed of five events. Each event has one or more alternates. The individual must choose and complete one exercise for each event. You may recognize some of these test events since they were adapted to the test from the set drills. Each exercise must be executed as explained in TM 21-200 "Physical Conditioning."

In event number one you do either the Bend and Reach or the Squat Stretch. In both exercises, four counts equal one repetition. Event number two is either the Rowing Exercise or Situps. Event number three is the Trunk Twister or the Body Twist. Event number four is either the 8-count pushup or the pushup. In event number five, personnel under 40 years of age must take a half-mile run or a stationary run. Personnel over 40 years of age have the option of a one-mile walk or a stationary run. The half-mile run must be completed in four minutes, the one-mile walk in fifteen minutes, and the stationary run in two minutes.

SERVICE SCHOOLS

Branch Service Schools and other service schools have a physical fitness obligation which sometimes is not fulfilled. All Service Schools are required to maintain a physical conditioning

program. According to Annex "S," USCONARC Training Directive, Branch Service Schools are to offer instruction in the organization and supervision of physical training programs for all officer students. For example, seven hours are specified for Career Course Students. If the Branch Service School student does not get this instruction at the time as programmed by Annex "S," the opportunity will be gone as there is no other school where this instruction is provided. Annex "T" of USCONARC Training Directive and also DA TC 21-1 directs that there will be a program of physical conditioning for all service school students. There is some flexibility as to method and the time to be devoted to this purpose, but there are no provisions for a 100 percent reduction of this part of the program. Students in all Branch Service Schools who are pursuing courses eight weeks or longer in duration will be tested at least once during their course of instruction. Students in other service schools will be tested on a semiannual basis.

The Infantry School requires all students enrolled in a course eight weeks or longer to take a Physical Fitness Test. The Physical Combat Proficiency Test is given to Career Course, Associate Career Course, Infantry Officer Basic Course, Officer Candidate Reserve Component Candidate Course, Ranger Course, Infantry Radio Maintenance Course, Infantry Communications Supervisor Course, Infantry Mechanic Course, and Infantry Motor Transportation Course students. All personnel must score 300 points or retake the test on their own time. Personnel over 40 years of age are given the Army Minimum Physical Fitness Test. If they fail, they must retake the test. Airborne students take the Airborne Trainee Physical Fitness Test. Marine Corps students in the Career Course and Associate Career Course are given the Marine Physical Readiness Test. Overweight students and faculty members are ordered to see a physician and are required to follow appropriate programs.

Results of all tests must be recorded. Records will be maintained at the unit level of actual test results attained by each individual. The standard score card (DA Form 705) is now made a permanent document in the individual's 201 file. For reporting and evaluation purposes, the unit may devise their own form on which to record the scores. At the Infantry School, we are using FB Forms 28 and 29 for this purpose.

An Army-wide survey has just been completed, the purpose of which was to find out what units in the field were doing in physical fitness training. The six CONUS Army Headquarters and the Military District of Washington have recently submitted data. The survey has not been put into final form but some of the tentative conclusions may interest you.

The survey had as its first objective the determination of methods commanders were using to establish a vigorous educational program to emphasize an understanding of the need for exercise. Survey results reveal this is being accomplished through publication of official written guidance, the conduct of briefings, insertion of physical fitness as a topic in Troop Information lectures, and the training of leaders in unit schools. DA Pamphlet 21-1, which contains guidance for the individual, is to be distributed to all officers, warrant officers, and NCOs. The survey reveals approximately 95 percent of all personnel have received personal copies of the pamphlet. A local shortage of pamphlets is the principal cause for falling short of the 100 percent distribution goal.

Many actions designed by commanders to maintain continuous command emphasis on physical fitness were reported. For example, there is increased attention to coverage of all personnel with a physical fitness program by adding additional time to training schedules for physical conditioning, granting incentive awards to those who excel, encouragement of staff and specialist personnel to pursue personal exercise programs, scheduling of training inspections to insure quality programs, making physical fitness an item of concern in IG inspections, requiring reports to verify that all able-bodied personnel are engaged in a program of exercise, placing emphasis upon semiannual physical fitness testing, applying close attention to the prescribed overweight program with the posting of diet charts in dining halls, and the listing of overweight men on "Fat Man Charts."

According to Annex "S" of the USCONARC Training Directive, Branch Service Schools are to program instruction in physical training for leaders' courses. This instruction is to cover how to organize, plan, and supervise a physical training program. The survey reveals only 50 percent of the branch service schools to be scheduling this type of instruction.

Many types of physical activities were reported to be used by field units in their duty-time physical conditioning program. In the order of magnitude Drill One leads the list, followed by organized athletics, and then by running. A lesser percentage of the time is devoted to the supplementary activities. To determine the amount of participation in physical activities and sports as sponsored by Special Services, installations were requested to report the type and frequency of such activity. The sports enjoying the greatest participation, in the order of their magnitude, are swimming, bowling, softball, volleyball, and basketball. There were 25 activities and sports listed with those not mentioned being used to a lesser extent.

With major emphasis on the maintenance of proper weight standards, it was decided to have the Armies report the number of men who have been detected as overweight. From the survey, it was determined that overweight is not a problem in the Basic Training Centers. There is somewhat of a problem in combat organizations, TD type units, and among staff and specialist personnel. On the average, approximately 1 percent of the Army is overweight. This represents approximately 9,000 men, or three-quarters of all the men in a division.

A very favorable account was received relative to the attainment of minimum passing levels on Physical Fitness Tests. There was a 95 percent rate of minimum qualification on the Physical Combat Proficiency Test. Personnel passed the Army Minimum Physical Fitness Test with a slightly higher rate of 96 percent. A less favorable account by combat and combat support units was registered on the combat-ready standards of the PCPT. Combat units reported 80 percent passed these standards, and combat support units reported only 40 percent of their personnel passing. Approximately 65 percent of all personnel participated in the PCPT, 25 percent in the AMPFT-M, and 10 percent did not participate for various reasons.

Problems encountered in implementing DATC 21-1 centered on: finding time to schedule physical fitness programs; absence of inclement weather facilities; a shortage of DA Pamphlet 21-1; and the requirement to handle the test scorecard excessively between cards between tests in the individual 201 File. The weakness of the program, as reflected by DATC 21-1, is in three areas. First, the AMPFT provides no incentive without a scoring system, some events are too easy, and the directions for administering the test are not explicit enough; second, the present scorecard is not suitable for recording AMPFT performance; and third, there is a weakness in the individual literature as it does not contain a progressive program of exercise. The Armies recommend the re-examination of the Army Minimum Physical Fitness Test to eliminate weakness and uncertainty; a change in the manner of filing the DA 705 Scorecard to permit the unit to maintain the scorecard until such time as the individual is transferred and the scorecard then could be placed in the individual's 201 File; and the publication of a pamphlet for individuals containing a progressive exercise program.

SUMMARY

Never before in the history of our Country has so much emphasis been placed on physical fitness. In the Army, this emphasis is vitally necessary. As the physical requirements of our daily life lessen, the physical requirements of the battlefield become more rigorous. The Army is meeting its responsibility in this field:

1. Department of Army has directed strong command emphasis to physical fitness.
2. Commanders at all levels now have a direct responsibility to keep their personnel in good physical condition.

3. No longer can overweight personnel escape the responsibility to achieve physical fitness.
4. Physical fitness programs include: unit physical conditioning, off-duty special service activities, and personal or individual physical conditioning.
5. The 6-12 Exercise Plan and the advice contained in the pamphlet "Your Individual Physical Fitness" provides personnel in sedentary jobs a method of maintaining physical readiness.
6. As a check on the maintenance of fitness, all Army male personnel must take either the Physical Combat Proficiency Test or the Army Minimum Physical Fitness Test on a semi-annual basis.
7. A physical fitness requirement is placed upon the service schools by both DA and USCONARC. A requirement exists to teach, condition, and test. The United States Army Infantry School carries out this responsibility.
8. Records must be maintained of all individual test results for the purpose of commander's evaluation and such other records as to respond to the reporting requirements of higher headquarters.
9. All CONUS Armies and the MDW have implemented DA TC 21-1 and increased emphasis is being devoted to the physical fitness of Army personnel. The field survey indicates some minor problem areas, but overall, the program as specified in DA TC 21-1 has been well received in the field, and results are favorable.

When we think of physical fitness, we usually think of it as it applies to the Infantry. In modern war, however, whether conventional or counter guerrilla, all branches of the Army must maintain a high state of physical combat readiness. General Earle G. Wheeler, Army Chief of Staff, stated in a recent speech: "While overall physical fitness appears to be declining, the complex modern weapons of war tend to become more and more demanding in the physical stamina, manual dexterity, and mental alertness required of their operators. Our astronauts, our submariners, our Infantrymen, our armed forces, and our pilots must all be trained to, and maintained at a high peak of physical fitness and mental alertness. The same is true, although to a somewhat lesser degree, for the supporting forces. The only answer is a widespread, realistic physical training program."

As Infantry Instructors, we hope you will use your influence to convince other branches of this need. Although our Army is more than 180 years old, our physical training program is still in the embryo stage. New developments may be expected in this field. These new developments and techniques may be slow in coming, however, unless the Army is provided with recommendations, tested plans, and proposals from individuals who wrestle with the problem every day. Because of your experience and duty assignments, you know the problem and have some ideas as to solutions. When you come up with a good idea, or a problem at your school concerning physical fitness, we ask that you send it to the United States Army Infantry School to assist in the development of better programs and techniques.

CHAPTER 8.

BRIGADE AND BATTALION OPERATIONS DEPARTMENT PRESENTATIONS

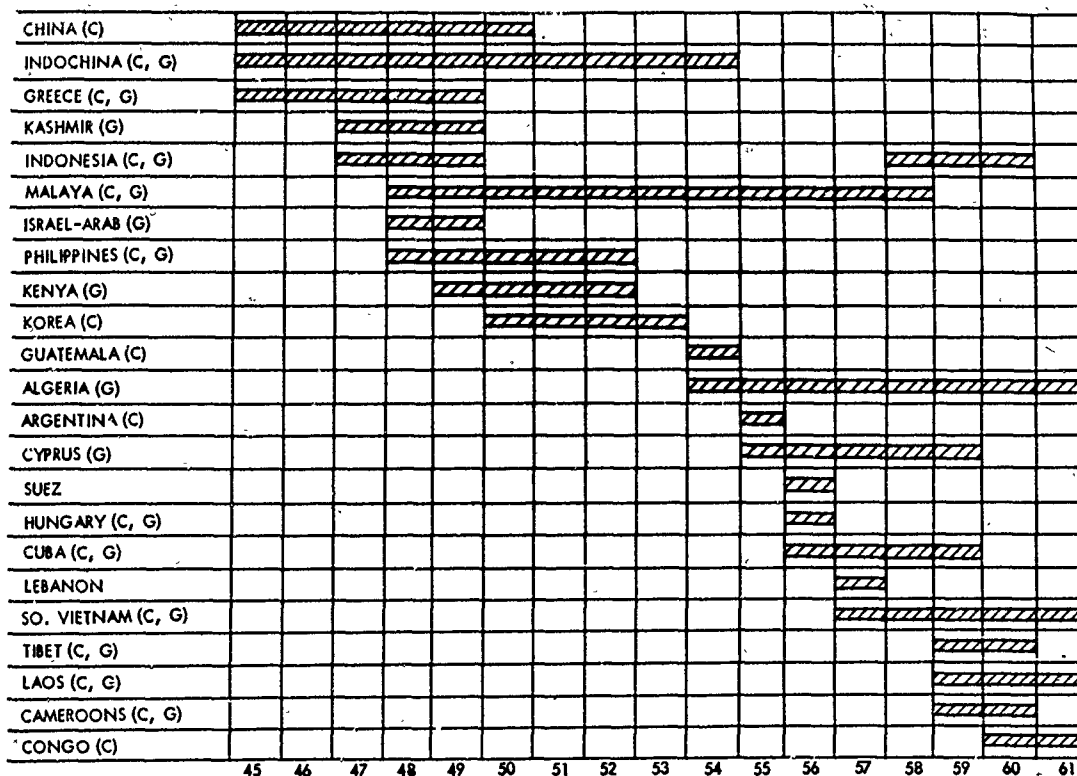
SECTION I. INFANTRY BRIGADE IN COUNTERGUERRILLA OPERATIONS

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INTRODUCTION

In FY 63, the Infantry School taught 55 hours of instruction in Special Warfare activities to the Infantry Career Course students, including psychological operations, unconventional warfare, and counter guerrilla operations in both an active theater of war and in a counterinsurgency environment. This fiscal year, 65 hours will be taught in these subjects. Of the 55 hours taught last year to the Career students, 44 were on counterinsurgency operations. This is where the overall emphasis is placed. An overt effort is being made here at the school to drive home the fact that the conduct of counterinsurgency operations, such as is now going on in Vietnam and in areas of incipient insurgency, such as in the countries of South America, is not a special operation - not something to be filed away as a nice-to-know subject. As for other tactical instruction, the level of learning we strive for in this area is predominantly a "working knowledge," the learning of the skills required to perform TODAY in the field in this type of operation. As you are well aware, the training directives of USCONARC make it mandatory that the Infantry officer have such a professional background in this subject.



C: Involved Communists.
G: Primarily a guerrilla or terrorist operation.

Figure 1. Age of the Guerrilla.

In Figure 1 we see the incidents of subversive warfare which have taken place since the end of World War II, indicating those which were primarily guerrilla wars and those which had a predominant Communist involvement. This chart is important to us for three reasons: First, in many of these situations the control of nations was actually won by armed might without the application of conventional tactics and techniques prescribed for regular armies on conventional battlefields; for example, Indochina, China, Cuba, and Tibet. In other words, this type of warfare can be successful; in fact, historically, insurgent operations have been so almost without exception.

Second, this chart is important for it gives us a valid index of what to expect in the future--it fortifies and gives credence to the remarks of Premier Khrushchev on 6 January 1961 when he said, "Liberation wars and popular uprisings will continue to exist as long as imperialism exists . . . Such wars are not only admissible but inevitable . . . We recognize such wars. We help and will help the people striving for their independence." So, we can expect subversive insurgencies to continue to be used in the world as a major political tool of the opponents of democracy.

Third, this chart is important because in light of American foreign policy, it gives a valid index as to what type of warfare you and I must be directly prepared to conduct. In his inaugural address the President aptly summed up our involvement in the insurgent situations arising from "The Revolution of Rising Expectation" which is taking place throughout the underdeveloped areas of the world. In that speech he said:

"To those new states whom we welcome to the ranks of the free, we pledge our word that one form of colonial control shall not have passed away merely to be replaced by a far more iron tyranny. We shall not always expect to find them supporting strongly their own freedom--and to remember that, in the past those who foolishly sought power by riding the back of the tiger ended up inside.

"To those people in the huts and villages of half the globe struggling to break the bonds of mass misery, we pledge our best efforts to help them help themselves, for whatever period is required--not because the Communists may be doing it, not because we seek their votes, but because it is right. If a free society cannot help the many who are poor, it cannot save the few who are rich."

Now a few words about our work during this presentation. I do not propose to review in four hours the entire body of tactics and techniques employed in counter guerrilla operations; rather, I shall attempt to indicate as clearly as possible the frame of reference within which this subject area is taught here at the Infantry School. Specifically, we shall take a brief bird's eye view of counterinsurgency, what it is, and of what stages of activity it consists. Then, second, we shall look at the enemy we find in this environment, addressing ourselves generally to two questions: "What is the nature of the organization of an insurgent movement," and, "How does it operate?" And, then, we shall spend the remainder of the afternoon looking at selected portions of the basic counter guerrilla problem taught here at the school, an 8-hour map exercise titled "Infantry Brigade in Counter guerrilla Operations."

A word of caution before I start--we are "stuck"--yes, that is the right word--with a glossary of terms unique to this particular business. We at the Infantry School don't like many of the terms used in this area, particularly those which replace a like term now commonly used to mean the same thing in conventional operations. We have tried to change these terms. We are able to change a very few of them in the new FM 31-16, "Counter guerrilla Operations" which has been published this year--for instance, the old terms "destruction operations" and "elimination operations," which mean coordinated attack against located guerrilla forces, have been replaced with the conventional term for the attack--"offensive operations." But most of

this undesirable terminology can not be changed--it grew up with the rapid development of counterinsurgency doctrine--some came from the State Department, some from historical works in this area, and the remainder from a myriad of sources. I shall not belabor terminology during this presentation--but please bear with me in the few places where some definition of terms is imperative.

COUNTERINSURGENCY OPERATIONS

Counterinsurgency operations are officially defined as "those military, paramilitary, political, economic, psychological, and civic actions taken by a government to defeat subversive insurgency." An insurgency is defined as "a condition resulting from a revolt or insurrection against a constituted government which falls short of civil war." These are very broad terms--very conveniently broad. When you realize that the definition of insurgency can, in today's usage, accept the word "incipient" before the words "revolt or insurrection," you realize that "counterinsurgency operations" can be conducted in almost every country in the world, for what country excluding some of the more stable old line powers does not have a vehement minority at least in the stage of embryonic subversive expression? Almost every one of the new republics borne since World War II have a subversive opposition which fits this definition.

When you realize further that any official American activity ranging from psychological operations--to economic aid--to development of the aesthetic arts--to direct military intervention--is properly considered the conduct of counterinsurgency operations if conducted in a country with an incipient or actual uprising, you can see that the term, "counterinsurgency operations," becomes almost synonymous with the term "cold war activities."

As I said, this is a term conveniently broad--conveniently for the political philosophers and the top level planners responsible for developing all-encompassing plans of action against a national geo-socio-political deformity--but this broad definition of counterinsurgency operations causes us in the military schools system a bit of trouble. In its simplest form the problem is this--we are directed to teach counterinsurgency operations--the problem is just what do we teach within the time available. We cannot give a complete course in geography, political science, applied psychology, comparative religions, ethnology, aesthetics, economics, and the tactics and techniques of counter guerrilla operations--it just cannot be done. Yet knowledge in all of these areas is vital to success in counterinsurgency operations and as you know we have a multitude of prophets about us, each setting forth, what in his own best judgment, is the one facet of these operations to be most emphasized. In all probability they are all right to a degree, for above all else, counterinsurgency operations must have a "total" approach, prepared to attack every deficiency which can present obstacles in a country to the rapid development of human capabilities, with a concomitant development of an environment of individual freedom necessary for their exercise.

The Infantry School has made a decision of what it feels must be emphasized in counterinsurgency operations for our student clientele. I shall cover that later.

PHASES OF COUNTERINSURGENCY OPERATIONS

As you are well aware, the growth of a subversive insurgency is evolutionary. Consequently, the counterinsurgency actions required against an insurgency today, if not applied, may be wholly inadequate three months from now. Counterinsurgency operations admit of a tremendous amount of variance in degree--and no two situations are alike. However, for the convenience of discussion, counterinsurgency operation can, for our purposes, be discussed as consisting of three broad possible phases--depending generally on what assistance the American government must give a country based on the degree of the threat and the ability of the host country to counter it with its own resources.

Phase One of counterinsurgency operations occurs when the requirements of the country for American assistance are limited to the provision of economic aid and training advice and assistance.

Phase Two occurs when there is a requirement for operational assistance--combat support and combat service support, if you will--to support the indigenous military effort. We are in that stage of operations in Vietnam today, when we provide Army aircraft, signal, engineer, and logistical support to the Vietnamese armed forces as it fights the insurgent threat.

Phase Three occurs when, all else having failed, the American Government is committed by accepted invitation to put maneuver elements on the ground to fight the insurgent guerrilla force shoulder to shoulder with the indigenous armed forces.

EMPHASIS OF USAIS INSTRUCTION

It is on Phase Three counterinsurgency operations that the Infantry School places its emphasis. Primarily, we concern ourselves with the tactics and techniques which must be employed by US Army units in counter guerrilla operational training and in actual operations. Certain questions naturally arise concerning this decision to teach counterinsurgency operations at this point on the spectrum--such as "Is there not a low level of probability that the Army will ever be used in actual combat against an insurgent force in a cold war environment?" The answer, of course, is "yes." In fact, we would hope that the provision of advice and training assistance in Phase One would always be sufficient to see the host country through to success against its internal insurgency. At worst, we hope that the additional operational assistance provided in Phase Two will tip the scales decisively in favor of the host country. This, then, leads to the next logical question--"Why, then, doesn't the Infantry School place its emphasis on Phases One and Two--on the training of Infantrymen to provide advice and training and operational assistance to the indigenous forces instead of how to fight guerrillas with American forces?" The answer is simple--it is felt that by teaching the Infantry officer the basic tactics and techniques of counter guerrilla operations we are not only preparing him to lead American troops in operations against guerrillas but are also providing him with the one type of knowledge he is expected to have expertise in when he serves in Phase One or Two as a MAAG advisor--namely, how to beat the guerrilla in armed combat--how to conduct the armed portion of the counterinsurgency operation.

We realize that the Infantryman must have an acute awareness of the totality of the successful counterinsurgency formula. He must be aware of the importance of psychological operations, economics, politics, etc.--in fact, at the individual level he must become directly involved in many of these activities within his own means--in the program of activities which are called "military civic actions." But, first, last, and foremost, the business of the Infantry officer in counterinsurgency operations is most properly the beating of the overt armed guerrilla force, whether by an American unit he is leading, or by an indigenous unit he is advising. And the business of beating the guerrilla is essentially the same no matter what army is executing the activity. In fact, the armies from which we have learned our most valuable lessons in this area have born little resemblance to the modern Army ROAD titan--the American Army in the Indian Wars, the Philippine Army against the Huks, the present Vietnamese Army, etc.

GENESIS OF AN INSURGENCY

Now let us look at the nature of the enemy in this type of operation. A detailed understanding of this enemy is very important to effective instruction in counter guerrilla operations--for it is in a detailed analysis of how an insurgency is organized and functions that we find the reason for using tactics and techniques not applicable to the modern conventional battlefield. Not too long ago, it was comparatively common for some military personnel to hold the view that

counterguerrilla operations were not substantially different from conventional military operations. Certainly, they maintained, the enemy was less sophisticated and more ragtailed, but beyond that there was little difference. What difference there was existed to them primarily in the fact that this less sophisticated enemy could be beaten down faster by a well-trained modern military force than could a conventional enemy. Of course, this sort of approach to this type of warfare scarcely exists today; even the layman, with his knowledge based on newspaper accounts of the Viet Cong operations in Vietnam, can point out the fallacies of such a position.

Let us look briefly at an insurgency then and see how its nature dictates a basic change in tactics and techniques to effectively counter it.

The fundamental cause of an insurgency movement is the real, imagined, or incited dissatisfaction of a portion of the population with prevailing political, social, or economic conditions. Now, this dissatisfaction will normally crystallize early in the resistance movement into a firm ideological base. This ideological base may be essentially positive in nature with such goals as national independence, economic and social improvements, or the securing of individual rights. Or, particularly early in the movement, the base may be primarily negative with such goals as relief from actual or alleged oppression, elimination of foreign occupation, or elimination of exploitation and corruption. Whether the goals be positive or negative, the important thing is to realize that from the very start you are fighting an ideology. And, since shooting guerrillas is a very ineffective way to destroy an ideology, we find right here in the fundamental cause of insurgency, the first major difference between counterinsurgency and conventional operations - actions on the counterinsurgency battlefield at all levels of command must be a total military-civilian effort to both destroy the armed guerrilla forces of the insurgency and attack this ideological root of the resistance. How do you attack an ideology? In the simplest terms, if the ideology is valid you satisfy its requests - you remove exploitation and corruption, or grant independence, make economic improvements or whatever the case demands. If the ideology is not valid, then you have a selling job on your hands; psychological operations must be conducted to convince the minority that they are wrong in their views. Again, I'm talking in simple terms. Normally, the situation will be more complex and will require the simultaneous satisfaction of certain ideological goals and the psychological re-education of the minority. Now, once you have a sufficient number of the population discontented with conditions which cannot be changed by peaceful and legal means, and also have - and this is important - a strongly motivated leadership element to lead the discontented population, you have an insurgency. From the time that small groups begin to live and work together for the subversive cause, they have one aim; to satisfy their ideological goals. Normally the course chosen is to attempt to overthrow the existing national or regional political structures. In fact, Mao Tse-Tung went further and said that guerrilla warfare, to be successful, must have this political goal.

Two courses are open for accomplishing such a political overthrow: it may be done subversively (the odds are against the success of this course, but a continuous attempt is made to effect a subversive overthrow of the government even if for no other reason than that every step in that direction further weakens the government); and second, the overthrow may be accomplished by military means - by decisively defeating the government forces. Now, guerrilla leaders have long recognized that conventional forces cannot be beaten by guerrilla warfare. So an insurgent force must continually strive to expand its popular base and enlarge its guerrilla force into a conventional-type Army. Herein lies its greatest hope of success. It must strive to form a conventional Army which can defeat the conventional government forces on the conventional battlefield.

In his book People's War, People's Army, Giap of the Viet Minh summed it up in this way: "From the strategic point of view, guerrilla warfare causes many difficulties and losses to the

enemy and wears him out. To annihilate enemy manpower and liberate land, guerrilla warfare has to change gradually to mobile warfare." This mobile warfare he explained as "a form of fighting in which principles of regular warfare gradually appear." Of course Giap does not propose that guerrilla warfare cease when regular or mobile warfare begins; rather, it is relegated to the ancillary role of supporting the regular warfare with operations in the rear areas.

ORGANIZATION OF AN INSURGENCY

Let us see how an insurgency is organized. Of course we must pick a point on the spectrum of development of an insurgency to talk about. If we move too far down on the spectrum we find only small dissident groups engaged in only covert activity; if we move too far up the spectrum, we find a movement with a regular force waging conventional warfare. So, for discussion, let's pick a point where sufficient strength and civilian support is available to support active guerrilla warfare, but not mobile or conventional operations.

At this point on the spectrum, the organization of the movement consists of three broad categories of personnel. First, there is the guerrilla force; this is the overt arm of the insurgent movement which may vary in the size of its operational units from small groups to battalions and larger units depending on its total membership and the amount of direct pressure being applied to it. At one time, the Viet Cong in Vietnam were conducting a number of operations using battalion-size units. Now the pressure is so intense that they operate primarily in company-size and smaller groups. Normally, the guerrilla force will be organized into regional troops and popular troops. Of course, in any given situation these names will be more popularized and specific. The regional troops are in the true sense of the word "mature guerrillas," who operate under centralized control and are free to be maneuvered throughout a designated region, district, or other prescribed area. The popular troops are more local in nature. They normally include the home guard which has the mission of securing sympathetic villages, providing limited security for village-level officials, etc. The popular troops also normally include a labor force to collect intelligence, make road repairs, build bases, fortify villages, and act as porters. Then, of course, as we've already discussed, in the latter stages the guerrilla force may organize a regular army.

The second element of an insurgency is the underground. Whereas the guerrilla force is the overt arm of the insurgency, the underground is its covert arm. Members of the underground usually maintain their identity as part of the civilian population and conduct such activities as espionage, sabotage, delaying or misdirecting orders, blackmail, theft, assassination, etc. The underground is a necessary increment of the insurgent organization. It complements the guerrilla force and operates best in those areas where the guerrilla force cannot operate such as in built-up areas or in the vicinity of large conventional military forces.

The guerrilla and underground elements of an insurgency constitute what is called in military jargon "an irregular force."

The third element of an insurgency is the civilian support of the movement - often called the "auxiliary" or the "part-time guerrillas." Whatever it is called, it consists of those individuals who are sympathetic to the insurgent movement; but, who for various reasons do not actively participate as a member of the irregular force. It is on these individuals, of course, that the irregular force depends for the majority of its support, both moral and physical.

As stated earlier, the instruction here at the School concerns itself primarily with the tactics and techniques required to beat the guerrilla element of an insurgency. This is most properly the Infantryman's business in counterinsurgency operations. Of course, our instruction doesn't minimize the importance of the underground and the body of civilian support. It's

just a matter of where the emphasis lies. Our instruction clearly recognizes the fact that to beat a guerrilla force it must be isolated from the underground and its civilian support. By the same token, we integrate the entire area of military civic action into our instruction, but ultimately our business is beating the guerrilla.

GUERRILLA OPERATIONS

So let's see how this guerrilla operates. Actually, I'm not going to bore you with all the details of how a guerrilla fights; you are as familiar as I with the requirements for preplanning, the care that must be taken not to engage superior forces, and the requirement for using difficult terrain such as jungles, mountains, swamps, etc., which gives the guerrillas an advantage in direct proportion to the disadvantage it poses for the conventional enemy.

Mao Tse-Tung summed up guerrilla operations very well when he stated, "When the enemy attacks, withdraw; when he defends, harass; and when he withdraws, attack." In conducting these operations the guerrilla compensates for his lack of sophistication and staying power by the expert use of surprise, shock action, mobility, and by the distribution of his forces in depth throughout an entire area.

Actually, I want to make one point here concerning guerrilla operations, possibly the most important point of this entire presentation. That is that the guerrilla, because of his lack of sophistication and lack of staying power, has little interest in the seizure and retention of specific terrain. It is manifestly important that you and I understand this point with all of its ramifications. Its greatest ramification is, of course, that we can't fight a guerrilla force using conventional tactics. At the brigade and lower levels, our conventional tactics, except for certain participatory roles in the mobile defense, are based on attacking to seize advantageous terrain and on defending such terrain now in our possession. In counter guerrilla operations, you can sit on and defend advantageous terrain until Hades resembles Antarctica and not kill a single guerrilla - or even see one - except when he conducts a well-planned harassing operation against your static position at a point in space and time which is highly advantageous to him. There are other ramifications of this fact, and its corollary, that the guerrilla orients on its target instead of terrain. It means first of all that you've got to find the guerrilla; he has no fixed lines oriented on terrain to give a clue as to where he is. Further, it means that once you do locate a guerrilla force, you have no assurance that he will be where you found him fifteen minutes later unless perchance, you've located his base in difficult terrain and even this he will vacate without hesitation. It means that once you have located the enemy, you have essentially two choices in how to destroy him: (1) you can attack with surprise and hope he does not vacate the area before your attack is effective; or (2) you can take measures to preclude his flight from the area and make him stand and fight your superior forces. One other ramification of this statement which we could all learn to appreciate more is that against an enemy which can, day in and day out, flee the scene of contact without any significant tactical loss, we must be satisfied with and show more optimism over partial success--for seldom will a situation ever present itself where a conventional force can use surprise so effectively or where it can so securely seal off an area so as to preclude the flight of a significant part of the located enemy force. In this business, what is too often frustration over a partial success must be converted into a realistic, optimistic challenge to be even more unrelenting in applying the pressure which leads to such successes.

So much for our enemy--in fact, so much for my generalizations concerning this subject area and the Infantry School approach to it. Let us look now at our basic counter guerrilla problem, "Infantry Brigade in Counter guerrilla Operations."

GENERAL SITUATION

The tactics and techniques reflected in this problem are essentially those found in the new FM 31-16, "Counter guerrilla Operations." As I have stated, this is a highly developmental area and minor changes to this FM are already in process. We feel that the manual is valid. It was processed not only throughout the schools system and the Combat Developments Command, but was also reviewed by USARPAC headquarters and our forces in Vietnam. These tactics and techniques were used last year in Exercise SHERWOOD FOREST with success.

The area of operations of this problem is as shown in Figure 2. This problem has no intentional relationship to the current situation in Vietnam. Reduced to its barest essentials, the general situation of the problem is as follows. For some ten years the CIRCLE TRIGON party has been building up its insurgent strength in Southeast Asia until the threat within the Republic of Vietnam has reached critical proportions. For all practicable purposes, the entire area north of the SONG BA River is presently under the control of the CIRCLE TRIGON insurgency forces. In this situation, it is estimated that the Aggressor guerrilla force has 24,000 personnel in battalion-size groups of 500-600 personnel throughout the country.

The situation became increasingly more critical until the Republic of Vietnam requested that the United States dispatch maneuver elements to fight the CIRCLE TRIGON on the ground by the side of the indigenous forces.

The 1st Brigade of the 21st Infantry Division (STRAC) has been air and sealifted into an assembly area as shown and has been directed to occupy its assigned area, as shown in Figure 2, and begin operations. Its mission is threefold; namely, to establish police control in the assigned area; to secure Highway #1 and the railway in the area; and to destroy guerrilla forces in the assigned area.

Let me briefly analyze the assigned area. Problem time is in May--during the latter part of the spring transition and the beginning of the southwest monsoon. This means little precipitation, and moderate temperatures and humidity. For all practical purposes all streams and rivers within the area are fordable. The lowlands are densely populated and predominantly agricultural. Village complexes of two to five hamlets have less than 800 inhabitants in most cases. Highway #1 and the east-west highway are the principal roads in the area. The railway paralleling Highway #1 is single track, one-meter gage. The principal towns are BINH DINH and AN HANH. BINH DINH is a town of some 4,500 inhabitants. It is the province capital and location of the MAAG training area for all Self Defense Forces in the area. AN HANH is larger (6,300 inhabitants). The only serviceable improved airfield in the brigade area will take up to the C-124 variety of aircraft. A US Information Service Team operates a radio and printing plant in the area, and the headquarters of the Provincial Civil Guard Battalion is located as indicated. The highland areas favor guerrilla activity. They are relatively unpopulated, and the higher elevations are relatively inaccessible by roads and trails and offer good bases for guerrilla forces.

The enemy forces in your area are as shown in Figure 3. In the western highlands are one "regular" guerrilla battalion and one "regional" battalion (or about 1,000 guerrillas). In the eastern highlands there is one "regional" battalion of 500 troops. At the village level you may expect from 10 to 12 peasants per village to be covertly supporting the guerrilla forces. The highland areas are considered for all intents and purposes to be under effective guerrilla control. The striped areas in the lowlands are under friendly control and the remainder of the area is under the really effective control of neither combatant.

Currently operating in the area is the Civil Guard Battalion we mentioned, with five companies and a total of 610 personnel. One US MAAG officer and five EM are advising the battalion. This battalion is essentially a province police or defense force. At village level (or more

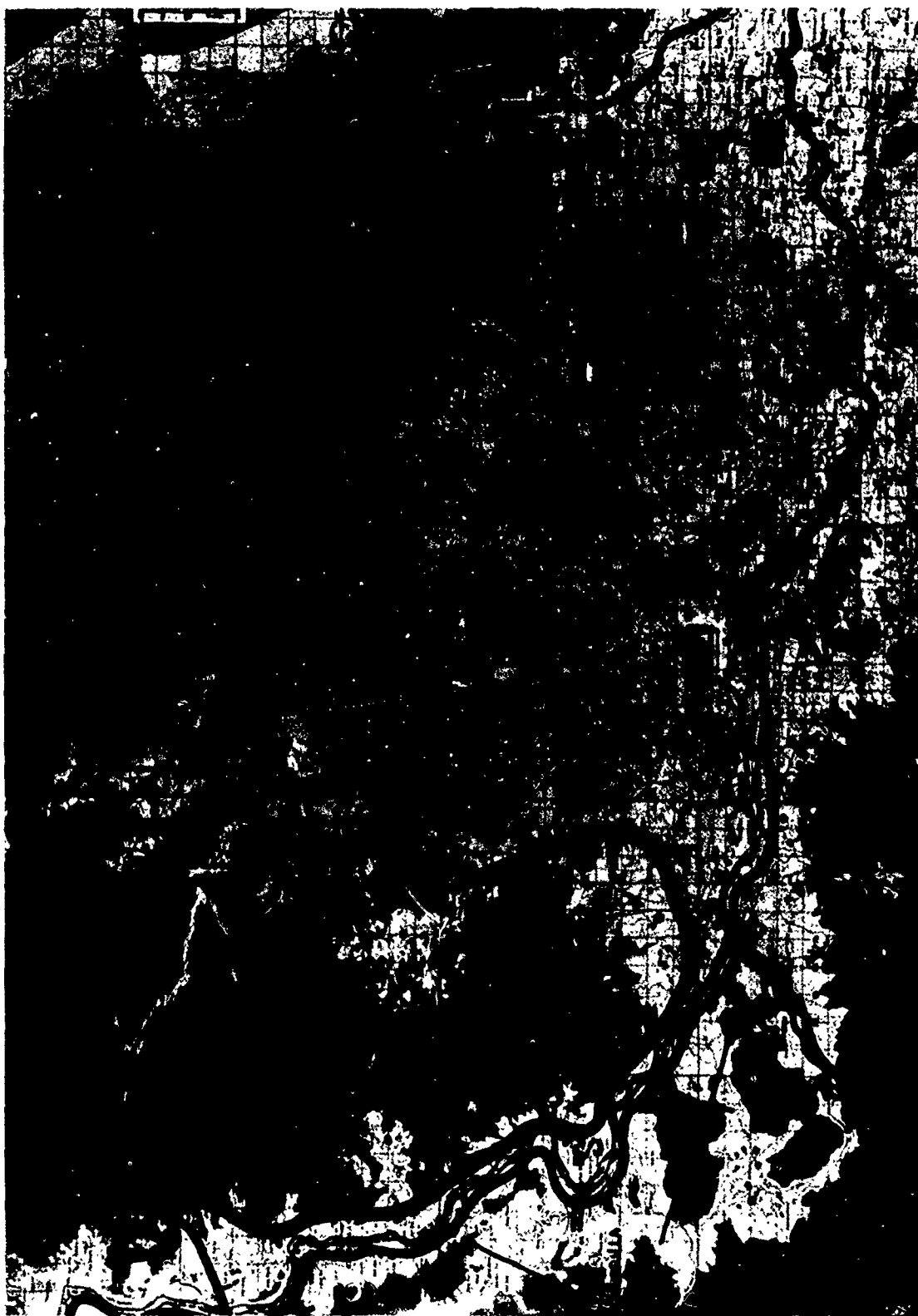
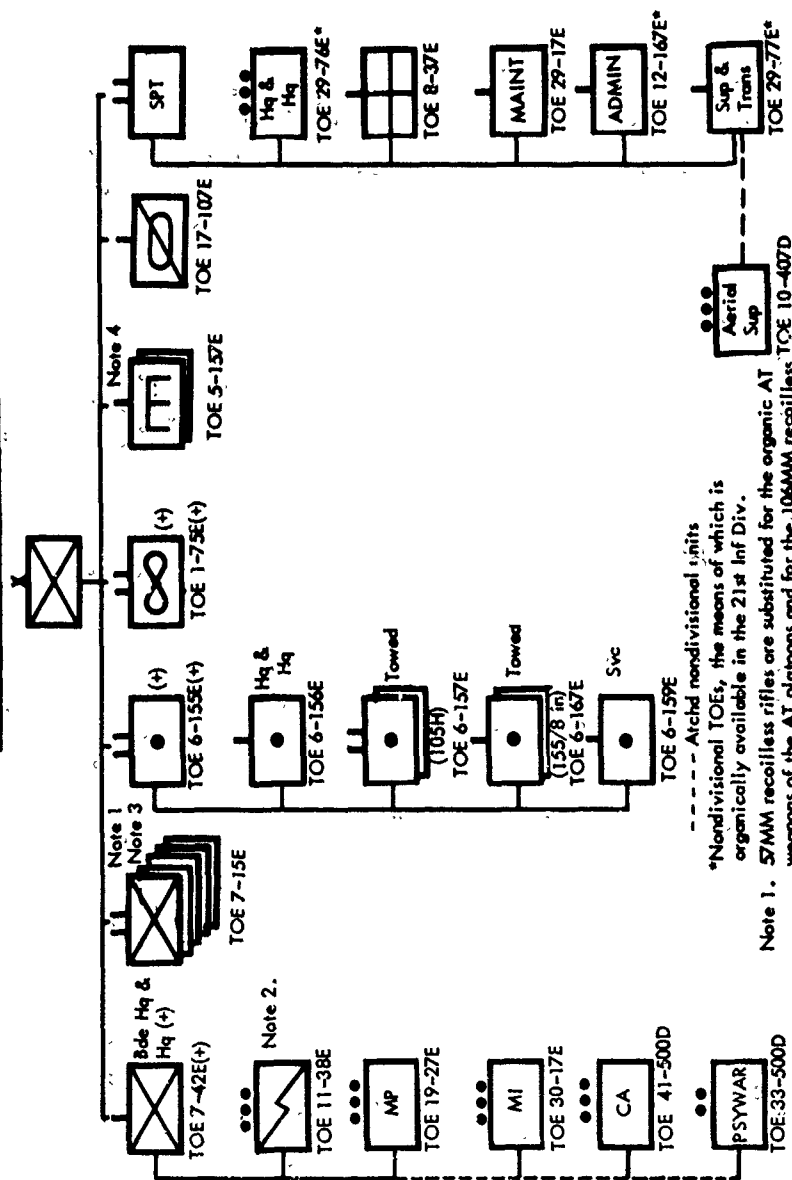


Figure 2. Brigade Area of Operations.

Infantry Brigade Counterintelligence Force



*Nondivisional TOEs, the means of which is organically available in the 21st Inf Div.

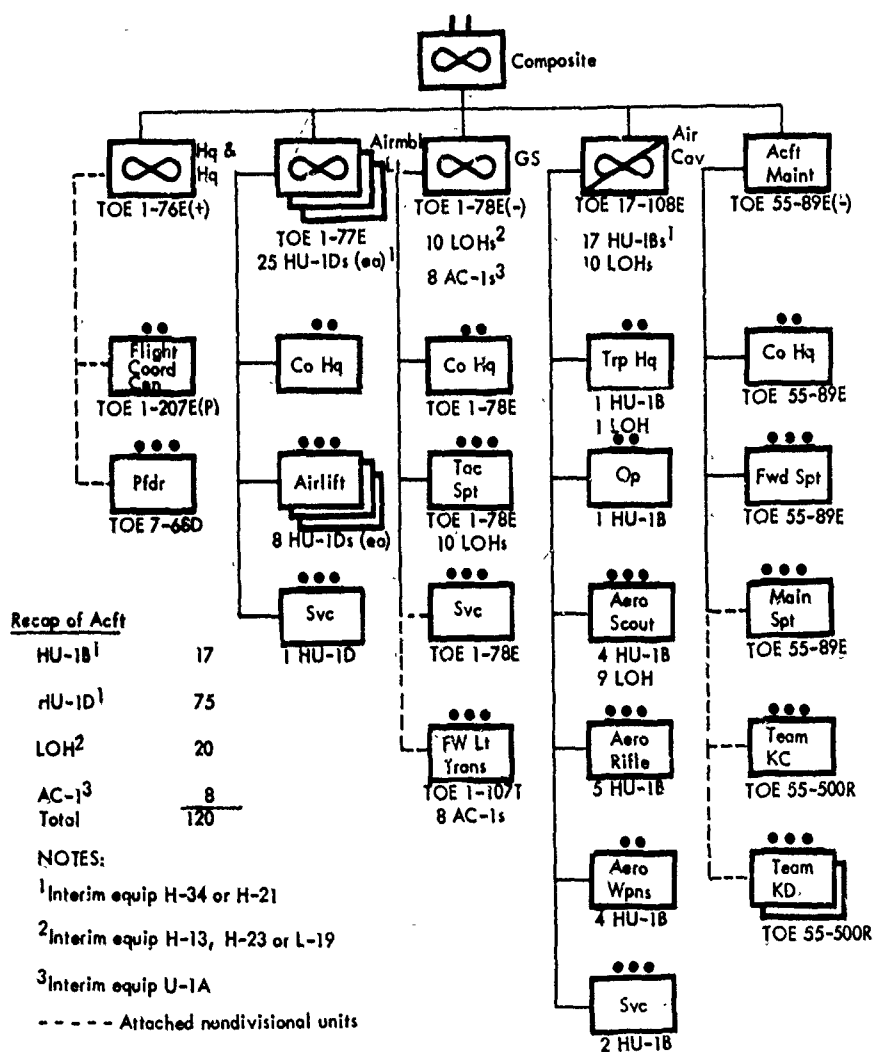
Note 1. 57MM recoilless rifles are substituted for the organic AT weapons of the AT platoons and for the 106MM recoilless rifles of the rifle companies.

Note 2. Augmented with 15 RS-109 radios.

Note 3. DC Sections have been deleted from the Infantry battalions.

Note 4. Engineer companies are commanded by the Engineer battalion XO and a small staff complement.

Figure 3. Organization of Brigade.



Aviation Battalion, Composite

Figure 4. Organization of Composite Aviation Battalion.

properly, at village complex level--each complex is made up of two to five hamlets) are some twenty-four 100-man Self Defense companies committed to the local defense of the villages in which the forces are organized. Eight US MAAG officers and 30 EM are currently advisers to these forces. A provincial special police force of two 90-man companies is attempting to secure Highway #1 and the railroad. All these forces will come under the operational control of the brigade when it occupies its assigned area.

The brigade is organized as shown in Figures 3 and 4. This is felt to be a typical force structure for a brigade with the mission of conducting independent counter guerrilla operations.

Now, utilizing this tactical vehicle, I propose that we answer the following questions for the brigade, battalion, and company echelons of command:

First, how does the unit organize on the ground?

Second, how does the unit organize its forces for combat?

Third, how does the unit conduct operations?

In this situation the brigade commander phases the operation of his unit into two phases because he feels that the area is too large to be simultaneously cleared by a five battalion brigade. The graphic control measures for Phase I are shown in Figure 5; those for Phase II, in Figure 6.

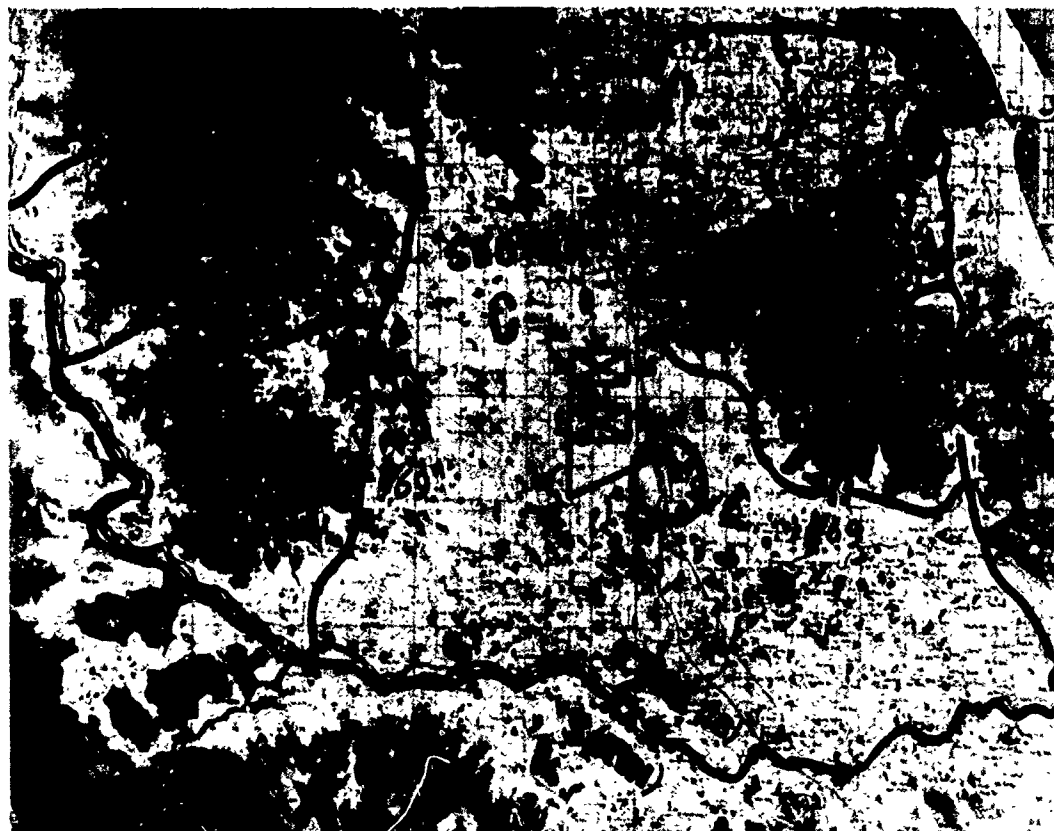


Figure 5. Phase I of Brigade Operations.



Figure 6. Phase II of Brigade Operation.

Pertinent extracts of his order for this operation follow:

* * * * *

Task Org:

TF Net
 1/66 Inf
 A1/70 Inf
 D1/21 Cav
 1st How Btry Gp, 45 Arty
 A1/46 Arty
 A1/48 Arty
 1/1/21 MP Co
 1/67 Inf
 1/68 Inf
 1/69 Inf
 2/1/21 MP Co
 OP CON:
 CG Bn (RVN)
 SDF (RVN)
 1/70 Inf (-A Co)

Bde Con:
 1st How Bn Gp, 45 Arty (-)
 1st Avn Bn (Composite) (+)
 A1/21 Cav
 A&B/21 Engr
 Plat/5216th CA Co
 Det/260 MI Bn
 Sec/87th Psywar Co
 1/21 MP Co (-)
 1B/21 Sig Bn (-)
 1st Spt Bn (Composite)

* * * * *

3. EXECUTION.

a. Concept of operation.

(1) Maneuver. 1st Bde (US) will conduct a two-phase operation.

Phase I: (Beginning 3 May), 1/67 Inf, 1/68 Inf and TF Net conduct offensive operations to harass and eliminate overt guerrilla force in Sectors A, B and D, respectively. 1/69 Inf establishes police control of Sector C and initiates civic action and organization and training of additional SDF in sector. A/21 Cav secures Highway #1 and Railroad. TF Net conducts border denial within capabilities within sector D. 1/70 Inf (-) is bde reaction force.

Phase II (On order): 1/67 and 1/68 Inf conduct operations to harass and eliminate overt guerrilla force in Sectors E and F, respectively. TF Net secures and denies border and maintains police control of Sector D. 1/69 Inf continues Phase I mission and assumes responsibility for Sectors A and B. A1/21 Cav and 1/70 Inf continue Phase I mission. Annex C, Movement Plan.

(2) Fire support.

(a) Air. Priority of air support to TF Net, 1/67 Inf and 1/68 Inf.

(b) Artillery.

1. Priority of fires to 1/67 and 1/68 Inf.

2. Appendix 1, Artillery Fire Plan, to Annex D, Fire Support Plan (not issued).

(c) Annex D, Fire Support Plan (not issued).

b. TF Net:

(1) Phase I.

(a) Clear and control Sector D.

(b) Conduct border denial in Sector D.

(2) Phase II.

(a) Secure and deny border.

(b) Maintain control of Sector D.

c. 1/67 Inf:

(1) Phase I. Clear and control Sector A.

(2) Phase II. Clear and control Sector E.

- d. 1/68 Inf:
 - (1) Phase I. Clear and control Sector B.
 - (2) Phase II. Clear and control Sector F.
- e. 1/69 Inf:
 - (1) Phase I.
 - (a) Establish police control in Sector C.
 - (b) Initiate civic action and organization and training of SDF.
 - (c) Prepare to release, on order, one rif co to bde con as bde res.
 - (2) Phase II. Assume responsibility for Sectors A and B and continue Phase I mission.
- f. 1/70 Inf (-):
 - (1) Phase I.
 - (a) Bde reaction force.
 - (b) Prepare to provide a one co airmobile force on 30 minutes alert; Bn (-) on 1 hour alert.
 - (c) Prepare to execute bde reaction plans, on order.
 - (2) Phase II. Continue Phase I mission.
- g. A1/21 Cav:
 - (1) Phase I. In coordination with Province Special Police, secure Highway #1 and Railroad.
 - (2) Phase II. Continue Phase I mission.
- h. 1/45 Arty Bn Gp:
 - (1) Phase I.
 - (a) 1st How Btry Gp, 45th Arty
 - A1/45 Arty
 - A1/48 Arty
 - Attached TF Net
 - (b) 1/45 Arty (-): DS 1/67 Inf.
 - (c) 1/46 Arty: DS 1/68 Inf.
 - (d) B1/48 Arty: GS, fires planned and controlled by 1/46 Arty.
 - (e) Provide LO's to ea TF and bn.
 - (f) Provide FO's to ea rif co of all bns and A1/21 Cav.
 - (g) Establish communications with 1/69 Inf and A1/21 Cav.
 - (h) Priority of fires to 1/67 and 1/68 Inf.
 - (2) Phase II.
 - (a) Continue Phase I missions.
 - (b) 1/45 Arty Btry Gp prep to revert to bn gp control, on order.
- i. Avn Bn (Comp):
 - (1) Phase I.
 - (a) Prepare to airlift 1 co of 1/70 Inf upon 30 min notice, 1/70 Inf (-) on 1 hour notice.
 - (b) Bn (-): GS.
 - (2) Phase II. Continue Phase I mission.
- j. 1/21 MP Co (-): GS.
- k. A&B/21 Engr (+): GS.
- l. Coordinating instructions.
 - (1) TF Net, 1/67 Inf and 1/68 Inf maintain a reaction force of not less than two reinforced rifle platoons at combat base.
 - (2) Reaction plans will be prepared and rehearsed for assumed guerrilla reactions to operation.
 - (3) Reliable civilian support will be utilized to maximum.
 - (4) All units be prepared to participate in elimination operations upon location of large guerrilla forces.
 - (5) All units conduct civic action commensurate with military requirements.

- (6) All units select and report location of combat bases.
- (7) Annex D, Reaction Plans.

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DECENTRALIZED OPERATIONS

Counter guerrilla operations are extremely decentralized by nature. No large coordinated action in the conventional sense will take place in the brigade area until there is a requirement for offensive action against a located guerrilla force. The majority of the day-by-day activity within the brigade area will be small unit action to locate guerrilla forces, secure the population, installations, and lines of communication, train and assist the indigenous paramilitary forces, and conduct military civic action. Consequently, the operation is planned primarily so as to facilitate the operations of the subordinate battalions.

INHERENT OPERATIONS

The accomplishment of the brigade mission requires the successful accomplishment of two distinct types of operations within the brigade area.

In the guerrilla-controlled highland areas, in the eastern and western portion of the brigade area, the emphasis is placed on harassment of the guerrilla elements, offensive action to destroy them, once located, and the denial of sponsoring power support to the guerrilla forces across the international boundary. These actions are called combat operations.

In the heavily populated lowland area the emphasis is placed on control of the population and the security of troops, installations, communities, and lines of communication. These activities are called police operations.

In this situation the brigade is organized functionally on the ground so that 1/67 Inf, 1/68 Inf, and TF NET can conduct predominantly combat operations while the 1/69 Inf is concerned primarily with police operations.

Two other ancillary inherent operations must be conducted throughout the brigade area; namely, assistance in a program of military civic action and the continuous organization and training of paramilitary counter guerrilla forces.

Military civic action is defined as "The use of preponderantly indigenous military forces on projects useful to the local population at all levels in such fields as education, training, public works, agriculture, transportation, communication, health, sanitation, and others contributing to economic and social development which would also serve to improve the standing of the military forces with the population." Conducted to the extent allowed by the tactical situation, this action has two valuable results. It increases the economic and social level of the populace and it creates good will for the brigade counter guerrilla force.

Throughout the area, emphasis must be placed on increasing the size and capability of the paramilitary forces. The combined tasks of finding and destroying the enemy guerrilla force and, at the same time controlling and securing the population, their installations, and lines of communication, are normally more than a regular force has the capability to accomplish. Ideally, regular counter guerrilla forces should be employed to offensively engage the guerrilla force, while paramilitary forces conduct the required police operations and actions required along international boundaries. In this situation, the brigade does not have sufficient paramilitary forces in the area to accomplish these missions. Consequently, throughout the area maximum emphasis is placed on the organization, training, and provision of operational assistance to new paramilitary forces in the hope that, ultimately if the operation becomes a long-drawn affair, the entire regular force can be released to engage the armed guerrillas.

AREA ORGANIZATION

A military unit of company or larger size engaged in counter guerrilla operations is normally assigned a specific area of operation. Battalion areas of operation are called "sectors," and company areas "subsectors." The size of the area assigned to a unit depends on the mission, the terrain, the nature of the guerrilla force, and the troops available.

The brigade commander assigns areas to the 1/67 Inf, 1/68 Inf, and TF NET which are small enough for the units to clear and control without large groups of the enemy circumventing their forces and regrouping elsewhere in the area. The presence of extensive paramilitary forces permits the assignment of a much larger sector to the 1/69 Inf.

REACTION FORCE

Ultimately, the success of the brigade in destroying the guerrilla forces in its area will depend on the speed with which superior forces are dispatched to engage located guerrilla forces. The principle of "minimum force to locate the guerrilla, maximum force in advanced readiness to react and destroy him" is applied throughout the brigade. The brigade retains one battalion (minus one company) as a reaction force ready to move en toto or in part as an airmobile force to assist in the destruction of any located enemy guerrilla element. Reaction forces are in essence the offensive striking force of the counter guerrilla force. Such a force is normally maintained at company and higher echelons of command.

COMBAT BASE

The focal point for brigade tactical operations is the brigade combat base. It is located centrally around AN HANH where it has an improved airstrip and a railhead. This base includes the essential command, control, and administrative elements of the brigade. It also includes the reaction force when it is not committed to offensive operations. The size and lack of mobility of the brigade base dictate that it be semi-permanent in nature. Since such a static installation is a prime guerrilla target, it must be organized with a highly effective security system, to include protective obstacles.

EMPLOYMENT OF COMBAT SUPPORT UNITS

The counter guerrilla tactics of the U.S. Army are based on the maximum utilization of Army aircraft. In this situation, the brigade has sufficient transport aircraft to simultaneously lift the assault elements of one battalion. While situations will certainly arise where requirements will dictate that aircraft be attached or placed under operational control of subordinate units, the brigade will, whenever tactically feasible, retain the transport aircraft under its control for use on specific task assignments. This will insure the maximum effective use of the available craft. Priority for use of these craft will normally be to the brigade and lower level reaction forces.

The role of artillery in counter guerrilla operations has often been minimized. In this situation the brigade can, with the attachment of a battery group to TF NET, provide effective support for all forces conducting combat operations. This artillery can be effectively employed to: assist in the defense of static security posts, road blocks, and in support of patrols; harass guerrillas during periods of reduced activity; flush guerrillas out of difficult areas into pre-planned ambushes; provide illumination during darkness; and block guerrilla escape routes and inflict casualties on encircled enemy forces.

The armored cavalry troop is assigned a mission for which it is well suited; namely, the security of lines of communication. This troop, in coordination with the two paramilitary special police companies, can effectively secure the critical points along the north-south road and railroad and patrol the routes between these points.

The air cavalry troop is attached to TF NET for use in denial operations along the international border. This unit has the capability of not only effectively conducting surveillance operations along the border in periods of good visibility, but also of immediately engaging any located guerrilla element with an effective combination of fire and maneuver.

The attached engineers may be required to provide not only support for the tactical operations of the brigade, but also support for civic action projects for the population. Tactical tasks may include: clearing or improving of roads, trails, and bridges; assisting in establishing obstacles, and preparing static positions; assisting in detecting and clearing minefields and obstacles; route reconnaissance and road and bridge classification; and assisting in light construction.

To insure for the maximum utilization of the limited engineer support, the engineer companies are placed in general support of the brigade and used on specific task assignments.

The military police attached to the brigade are used as advisors on the conduct of police operations; not as "operators."

The civic affairs platoon and military intelligence detachment are kept in general support to assist in the planning and supervision of operations in their highly specialized and centralized areas of operation.

The forward area signal center platoon is employed to link the brigade with the next higher echelon of command.

GENERAL

During Phase I of this operation, 1/68 Infantry employs its units as shown in Figure 7 to accomplish its mission of clearing and controlling Sector B.



Figure 7. Deployment of Battalion in Combat Operations.

Pertinent extracts of the battalion commander's order for this operation are as follows:

* * * * *

Task Org:

A1/68
1 C1/68
1 AT Sqd (57mm)

B1/68
Recon Plat
1 AT Sqd (57mm)

C1/68 (-)

Bn Con:

Mort/DC Plat (-DC Sec)
AT Plat (-)

* * * * *

3. EXECUTION

- a. Concept of operations. 1/68 Inf clears and controls Sector B, employing A1/68 (+) in Subsector I and B1/68 (+) in Subsector II, C1/68 (-) bn reserve as bn reaction force. Mort/DC Plat (-DC Sec) GS. Annex C, Movement Plan.
- b. A1/68 (+):
- c. B1/68 (+):
- d. C1/68 (-): Prepare to execute bn reaction plan.
- e. Mort/DC Plat (-DC Sec): GS.
- f. AT Plat (-): GS, attached to C1/68 (-) on commitment.
- g. Coordinating instructions:
 - (1) A1/68 (+) and B1/68 (+) occupy and organize combat bases and conduct continuous harassing operation (long range patrols, ambushes, etc.) in assigned areas.
 - (2) A1/68 (+) and B1/68 (+) maintain a reaction force of not less than one reinforced rifle platoon at combat base.
 - (3) Reaction plans will be prepared and rehearsed.
 - (4) All units prepare to participate in elimination operations when large guerrilla forces are located.
 - (5) Reliable civilian support to be utilized to maximum.
 - (6) Annex D, Reaction Plans.

* * * * *

HARASSMENT OF THE GUERRILLA FORCE

At the start of combat operations, this battalion has no "hard" intelligence indicating the specific location of any guerrilla elements in the area. Consequently, it must conduct a program of harassment to: locate the guerrilla force; inflict casualties; gain detailed knowledge of the terrain; restrict the freedom of action of the guerrillas; force the guerrillas to consolidate or cease operations; and establish friendly control over areas of operations.

While harassing operations against the enemy may continue for weeks and months, they are nevertheless necessary until the location of the guerrilla element is known in enough detail to permit offensive operations to destroy it.

Once the exact area under the control of the guerrilla force has been definitely determined, the harassment operations will be restricted to this area.

Within their assigned subsectors, Companies A & B will employ the majority of their forces on small unit harassing activities such as reconnaissance patrols to locate guerrilla elements

and bases; combat patrols and raids against known and suspected enemy bases, installations, patrols, and outposts; aerial "hunter-killer" operations; marking targets; mining probable guerrilla routes of communication; and aerial surveillance.

These harassing activities are conducted day and night in an unrelenting fashion.

REACTION FORCES

Where a guerrilla element is located during harassing operations, the friendly force making contact with it engages the enemy and destroys it, if it has sufficient combat power. If it does not have sufficient combat power, it maintains contact with the encountered enemy and requests assistance from its parent company.

In this case, each company is required to maintain a reaction force of not less than one reinforced platoon at its combat base for rapid deployment to provide such requested assistance. In addition, when harassing units request assistance, the company commander concerned may redirect other harassing forces into the area of contact and/or request assistance from higher headquarters, if necessary.

In this case, Company C (minus one platoon) is considered an adequate battalion reaction force in view of the large reaction force available at brigade.

COMBAT BASES

Both the battalion and the companies with assigned subsectors organize highly mobile combat bases from which to operate. These bases are located to facilitate tactical operations in the area and to facilitate their own security. Since a majority of the unit will be out conducting operations, the bases should be as small as possible and located on highly defensible terrain.

These bases are moved periodically within the area of responsibility to prevent the guerrilla force from receiving detailed information about their location and disposition.

The bases are organized with encircling positions prepared from which they can be defended against guerrilla attack. Outposts and listening posts are established well forward of the base and occupied at all times. All roads and trails leading into the area are mined, if possible, and not used by the friendly forces.

EMPLOYMENT OF COMBAT SUPPORT UNITS

The organic weapons of the Antitank Platoon were replaced with the manportable 57mm recoilless rifle for this operation. The attachment of antitank elements to Companies A and B gives these units a weapon capable of blasting small forces from caves, inclosures, and hastily fortified positions without restricting the cross-country mobility of the force.

The Reconnaissance Platoon is attached to Company B primarily for use in police operations in the lowland fringe of that company's assigned area. With its organic mobility, the platoon can disperse over a relatively large area, periodically visit the civilian communities in the area, patrol lines of communication, and still mass rapidly to counter any contacted guerrilla element anywhere in the lowland area.

The Mortar/DC Platoon (minus the DC Section which is not brought into the area of operations) can provide effective support in the assigned general support role without hampering the mobility of the subordinate units. If required at any time, this unit can be readily displaced within the battalion area with utility helicopters.

OFFENSIVE OPERATIONS

Let us now discuss offensive operations - or in simple terms - what we do to destroy a guerrilla force once it has been located. You will recall that we said that one of the ramifications of the guerrilla's lack of interest in terrain was that to destroy him you either had to surprise him or take measures on the ground to make him stand and fight. Of the two choices, the latter offers the highest probability of success. This means, then, that the encirclement usually offers the most effective means to fix a guerrilla force in position so it can be destroyed. A large "sweep" of an area, or an attack in which all the friendly forces approach the enemy from one general direction, is usually worthless because the enemy will vacate the area in front of the attack. In the early days of the Vietnamese Conflict, battalions and larger units were often lining up and "sweeping" through areas known to hold hundreds of the Viet Cong. Normally, the operations were dismal failures--and often not one single identifiable Viet Cong was sighted during the operation.

Invariably, encircling operations, of course, require a friendly force much larger than the located guerrilla force. Some authors have said a ratio of 20 to 1 is necessary; some 10 to 1, and some ratios of lower magnitudes. Whatever the required ratio (and it, of course, will depend on the particular situation) one thing is for sure. This preponderance of force must be readily available for immediate deployment against the located guerrilla force. In this problem, this force is available in the brigade, battalion, and company reaction forces. This is the crux of our tactical doctrine: Use minimum forces to find the guerrilla and maintain maximum forces, preferably airborne or airmobile, in an advanced state of readiness to react to any located guerrilla force.

The schematic for a large scale reaction operation conducted against a located guerrilla force, by the brigade reaction force in this problem, might look like that you see in Figure 8 where the force originally detecting the guerrilla force is reinforced and occupies blocking positions to make the guerrilla stand and fight while a strong force (in this case, two companies) attacks and destroys the enemy.



Figure 8. Reaction Operation.

Note the reserves outside the line of encirclement. It is important that these reserves be present - preferably in an airmobile posture - because sooner or later the guerrilla force is going to realize that he is encircled. His most probable reaction to this realization will be to mass his forces for a concerted breakout attempt along a narrow front. In all probability, when he does this the reserves must be committed to thwart his effort.

There are a number of variations of the encirclement. The variation in Figure 8 is the "hammer and anvil," where one force holds its position while another attacks. A small-unit variation of this is the "rabbit hunt" where ambush forces are established around a small area such as a field or wooded area to engage any enemy fleeing in front of a hunting element which moves methodically through the area in a linear formation.

After the enemy has been encircled, it may be tactically feasible to "tighten the noose" by moving all along the line of encirclement to an inner encirclement line. Against small guerrilla forces this progressive contraction may sometimes be used to clear the entire area. However, against larger guerrilla forces, it is much more probable that at some point the contraction will form a "critical mass" requiring some other action, such as the hammer and anvil.

Historically, the use of saturation fires on the enemy have proven successful to destroy an enemy which is encircled in a small area. As always, the presence of reserve forces is required outside the encirclement to counter a concerted enemy breakout once the saturation fires have begun.

Here, let me reiterate a point I made earlier in these offensive operations. We must be ready to accept partial successes. No matter how you cut it, a significant portion of the enemy will often be able to escape your encirclement by individual exfiltration, if by no other way.

BATTALION IN POLICE OPERATIONS

GENERAL

During Phase I of this operation 1/69 Infantry recommends the organization of the protected villages shown shaded on Figure 9, and employs its units as shown thereon to conduct its assigned mission of police operations, civic action, and the training of additional paramilitary forces.

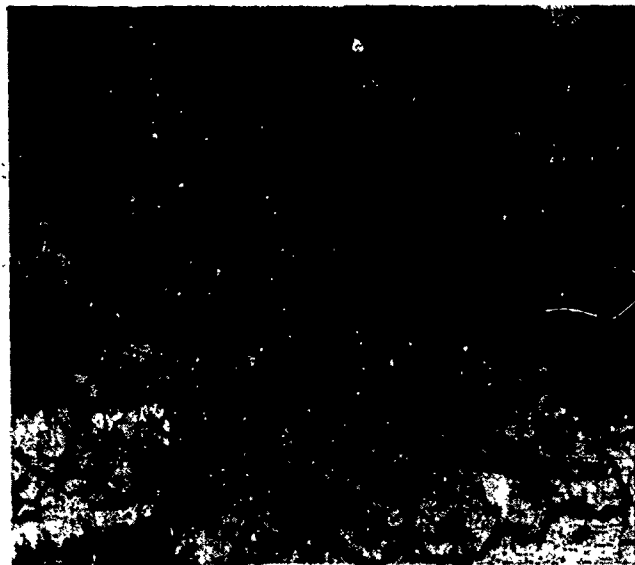


Figure 9. Deployment of Battalion in Police Operations.

Pertinent extracts of the battalion commander's order for this operation are as follows:

* * *
Task Org:

A1/69

AT Sqd

Mort/DC Plat (-DC Sec) (-)

1st Co, CG Bn (RVN) (OP-CON)

2d Co, CG Bn (RVN) (OP-CON)

Bn Con:

Recon Plat

CG Bn (RVN) (-) (OP-CON)

B1/69

AT Sqd

1st & 2d sqd, Mort/DC Plat (-DC Sec)

4th Co, CG Bn (RVN) (OP-CON)

5th Co, CG Bn (RVN) (OP-CON)

C1/69

AT Plat (-)

* * *

3. EXECUTION.

- a. Concept of operation. 1/69 establishes police control of Sector C, initiates civic action and training of SDF employing A, B & C1/69 Inf in coordination with Civil Guard Bn (RVN) and established SDF in assigned subsectors. Operation will be supported by nonnuclear fires.
 - b. A1/69:
 - (1) Establish police control in Subsector III.
 - (2) Prepare to be released to bde control, on order.
 - c. B1/69:
 - (1) Establish police control in Subsector I.
 - (2) Prepare to assume control of Sector A, on order.
 - d. C1/69:
 - (1) Establish police control in Subsector II.
 - (2) Prepare to assume control of Sector B, on order.
 - e. Recon Plat. Bn reaction force in combat base of Co C.
 - f. Coordinating instructions.
 - (1) Units prepare reaction plans for assumed guerrilla reaction in subsectors.
 - (2) Coordinate and establish communications with CG and SDF units.
 - (3) Maximum assistance will be given in support of CG and SDF activities for establishing protected villages, organization and training of additional SDF, and initiation of civic action.
 - (4) Civic action plan, Annex C.
- * * *

In simple terms, this battalion's mission is oriented on the control, security, and well-being of the civilian populace; as opposed to that of the 1/68 Infantry, which is oriented on the enemy guerrilla force. The accomplishment of the mission by the 1/69 Infantry will isolate the guerrilla force from its civilian support, impede underground activities, and remove the fear many villagers have of being killed or mistreated if they publicly align themselves with the counterinsurgent force.

PROTECTED VILLAGES

The synonymous terms, "protected villages," "secure villages," and "strategic villages" all refer to the end product of a program to prepare and conduct an adequate defense for the civilian communities in an area susceptible to guerrilla attack and intimidation. Hundreds of thousands of words have been written about the tremendous strategic value of the strategic villages constructed in Vietnam in the last few years. Let it suffice here to say that, as frustrating as a national or regional program of this sort can be, no better technique has yet been found to provide the security required before the average villager feels free to stand up and publicly be counted among those sympathetic to the friendly cause.

Such a program of providing protected villages as planned in the area of the 1/69 Infantry will require a tremendous amount of money, manpower, organization, and time, but no long range effort to develop an active counterinsurgent effort among the population could probably succeed without it. In some cases, these protected villages can be organized around existing hamlet-complexes; in others, new villages may have to be constructed and isolated families moved into them. In any case, the emphasis throughout such a program must be on "helping the people help themselves." If for no other reason, the very magnitude of the task dictates this. The people must assist in the construction of the defenses and provide their own forces for their local security.

EMPLOYMENT OF UNITS

The battalion commander assigns all three of his companies subsectors of responsibility and attaches out his Mortar/DC Platoon (-) and Antitank Platoon to get an equitable distribution of troops and combat support throughout the entire area. Company C will depend more heavily than the other companies on the artillery units located in its area to support the 1/67 and 1/68 Infantry. The elements of each company will expend most of their time and effort training and providing operational assistance to paramilitary forces in the area. Compared to this task, the utilization of regular troops on static security posts is a waste of valuable assets.

Each company will retain a reaction force in advanced readiness to react to any guerrilla attack of paramilitary police forces in the area. The battalion maintains the Reconnaissance Platoon as its reaction force in Company C's combat base to reinforce the company reaction forces.

The battalion establishes its headquarters in BINH DINH, the province capital. While this location is not centrally located, the battalion commander and his staff is close to their civilian province counterparts, where the myriad of details incidental to attaining a good military-civilian counterinsurgency effort can be worked out on a day-by-day basis. In every respect, the activities of this battalion will influence the daily activities of the civilians in this area. Without the active support and cooperation of the local government - from province to hamlet - in a joint venture, the operation is doomed to failure.

The battalion commander and province chief will find that many civilians in the area will not initially desire to participate in the planned police operations - and they can expect a violent CIRCLE TRIGON propaganda effort against them. The solution of the problem is the use of infinite patience, consistent good judgment, and continuous psychological operations.

MILITARY CIVIC ACTION

As we saw earlier the definition of military civic action includes practically every conceivable effort to better the well-being of the population. The 1/69 Infantry will be very directly involved in the conduct of these operations. Every soldier and piece of equipment in

this battalion will be engaged in these actions when not required for other operations. As we said earlier, you not only help the people help themselves - you create immeasurable good will. What can these troops do? The list is endless. Medics can treat the sick, roads and houses can be repaired, school can be taught, sanitation can be improved, and on and on and on.

However, I would like to emphasize one portion of the definition of military civic action - that part that says that it is the "use of preponderantly indigenous military forces" on these projects. Without degrading one whit the profound importance of these actions and the fact that we shall and must participate in them, I want to state most emphatically that they are ancillary tasks - not the primary mission of a counter guerrilla Infantry force. In this situation, the mission of the battalion is to secure and control a population; to improve its well-being is not given priority over the provision of this security.

DENIAL OPERATIONS

Now a few words about denial operations. In both Phases I and II of this operation (Figures 5 & 6), a major task of TF NET is to conduct denial operations to deny ingress/egress over the international border with the CIRCLE TRIGON sponsoring power. This business of denying borders is a difficult proposition. In Vietnam today there are over 800 miles of land boundary across which sponsoring power support can enter the country and guerrilla forces can move to "safe havens." This border runs through the swampy delta area, the jungles, and the rugged highlands found in the north. To control a border such as this is a task of mammoth proportions.

Essentially there are two concepts of border control; namely, the use of the restricted zone and the use of the friendly population buffer.

Under the concept of the "restricted zone" an area of predetermined width contiguous to the border is declared a restricted area. Appropriate proclamations are issued to the civilian population so all personnel understand that anyone encountered in the area will be considered hostile if he cannot be readily identified as a member of a military or paramilitary unit. The area is cleared if possible and obstacles such as mines and barbed wire are used, if practicable. The zone is controlled by the use of ground and aerial observers, electronic listening posts, and patrols.

Under the concept of the "friendly population buffer" the civilian population in the area along the border is redistributed as necessary to assure that all civilian personnel residing in the vicinity of the border are sympathetic to the friendly force. This may entail the: screening of all personnel now settled along the border; resettlement of those persons of doubtful sympathy along the border; and supplementary resettlement of the border area with elements of the civilian population with friendly sympathies from the interior of the area of operations.

In this problem, TF NET uses a combination of these techniques to accomplish its mission. In the population areas along the border, emphasis is placed on training self defense forces to deny the border adjacent to these areas. In the other areas along the border, the emphasis is on the preparation of restricted zones.

And most important of all--the overall emphasis is on the organization and training of an adequate paramilitary structure in the area which can ultimately assume total responsibility for the conduct of the entire denial operation--for it is most unrealistic to expect a regular army force to be tied down ad infinitum in this area controlling the border contiguous to a country which may have hostile intentions for years to come.

CONCLUSION

Dr. Bernard Fall points out in one of his works that in the past 15 years, almost a billion people have been involved in warlike situations not involving nuclear weapons--and in not one of them was a formal declaration of war proclaimed, and in only one, Korea, were two super-powers directly involved. This type of war is with us and we must continue to give it the emphasis it deserves. Counter guerrilla warfare is filthy, treacherous, and long drawn out--but to paraphrase General Chesty Puller, "While it's a hell of a lousy war, we must admit it's the only war we have today." Its importance is unquestioned.

During this presentation we have looked briefly at what counterinsurgency is and of what phases it admits. We have looked at the enemy, how he is organized, and how the characteristics of his operations force us to find tactics and techniques unique to the destruction of such an enemy. Then we pointed out where the Infantry School placed emphasis in this business--namely, on teaching the Infantryman how to beat the guerrilla in combat. Then we reviewed salient features of our problem 6163--trying to indicate broadly how brigades and subordinate units organize for and conduct counter guerrilla operations.

One final word in closing--the archives of the U.S. Army are over-flowing with factual and analytical data from the current conflict in Vietnam. I heartily commend its perusal to you. In his book "On Guerrilla Warfare," Lenin said, "It is necessary to be completely unsympathetic to abstract formulae and rules and to study with sympathy the conditions of the actual fighting, for these will change . . ." While we don't recommend that you become unsympathetic to the formulae and rules of current doctrine, we do heartily recommend that they be tempered and rounded out by continuing personal research of the current conflict we are participating in.

SECTION II. MECHANIZED INFANTRY BATTALION TASK FORCE IN AREA DEFENSE

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The purpose of this presentation is not to teach you defensive doctrine, but to illustrate for you one of the techniques of instruction that is used here at the Infantry School to teach tactics. This is the first problem that the student receives in defense at battalion level. The problem is the area defense, the unit a mechanized battalion task force, the environment a limited war. This presentation is developed around troop leading procedures and command and staff actions. As the Task Force Commander plans for the defense of his assigned sector, we will examine each of his decisions, discuss the factors considered, the alternate solutions, and the reasons for the decision in this particular problem.

Before we continue, we should understand the objective of any defensive operation. When a unit assumes the defense it is primarily for one reason and that is to stop the Aggressor's attack, destroy his force, and regain the initiative. In the area defense, at battalion level, this means that we organize the terrain to stop the Aggressor's attack by a combination of fire and maneuver. The battalion commander should place emphasis on the coordination of all available firepower to stop and repel the attacker. The maneuver, developed concurrently with the plan of defense, is applied after the penetration of the FEBA.

To stop an Aggressor's attack and gain the initiative requires the application of all the principles of defensive operations. The defender gains the initiative by selecting the area of battle, by forcing the enemy to react in conformity with the defensive plan, and by exploiting enemy weaknesses and error with offensive action.

TACTICAL PROBLEM

To give us a basis for our discussion, we have created a hypothetical war. The situation is this: The Aggressor executed an amphibious landing in the gulf area near Panama City, Florida. After expanding his beachhead, he launched an attack north. The 25th Armor Division is presently in contact with the Aggressor and is delaying the Aggressor south of Fort Benning.

Both US and Aggressor possess a ground and air nuclear capability. Only a limited number of nuclear rounds have been used tactically by both sides. US Forces are restricted from using nuclear rounds in populated areas.

Aggressor has air superiority. US Air Force is presently employed in gaining control of the air and only limited aircraft have been available for support of ground operations.

The 52d Mechanized Division, a part of 1st Corps, is moving south with the mission of defending the approaches into Columbus and Fort Benning, Georgia.

The division commander announced his decision to conduct an area defense employing the 1st and 3d Brigades from east to west respectively with the 2d Brigade in reserve.

While the 2/76 Mech Bn, 52d Mech Div, was still 25 kilometers north of Columbus, Lt Col 2/76 was ordered to fly to the 1st Bde CP for receipt of the defense order at 0900 hours and to close his unit temporarily into an assembly area. Prior to leaving the column the commander ordered members of his staff to bypass the column and meet him at the Bde CP and the XO to close the battalion in their assembly area.

Upon arrival at the Bde CP, the commander was briefed on the mission, weather, terrain, and enemy. When the staff arrived the commander briefed them on the mission as follows:

"We have been ordered to defend without delay a sector approximately 2500 meters wide just south of Red Diamond Road and approximately 4000 meters in depth. (Figure 1) We must plan to assist passage of elements of the 25th Armored Division and the division GOP located approximately 10,000 meters forward of the FEBA. Brigade has ordered us to block Box Springs Road with a mine field; and submit a recommended location for the antitank trace. For this operation, brigade has attached a tank company, and an engineer platoon is in DS. We have also been allocated 2 DC rounds per day; furthermore we have been allocated two 105 howitzer barrages for the defense of the FEBA."

After the staff conducted a map reconnaissance and coordinated with their counterpart at brigade, they briefed the commanders as follows:

The S2 furnished information on key terrain features and avenues of approach for an Aggressor mechanized rifle company. (Figure 2) The S3 reported that the tank company commander was moving his company into the TF assembly area and would report forward to Bush Hill not later than 1000 hours. Also, all of the tanks are operational. The artillery LO then informed the battalion commander that Div Arty wants to place a countermortar radar in the vicinity of Hill 652.

After receipt of all available information from his staff, the commander continues his planning. One of the items that the commander accomplishes is a map reconnaissance of the defensive area. This will give the commander an appreciation of the terrain to be defended and will enable him to select possible courses of action (location of the FEBA) to guide the staff in completing their estimates. After he has accomplished this he should plan his reconnaissance to conserve time. Factors to be considered are: utilization of staff to assist in reconnaissance; route of reconnaissance, coordination with adjacent units; time and place to meet his staff and attached and supporting unit commanders; security during the reconnaissance and of the defensive position until it is occupied.

Prior to departing for the defensive area the commander announces the following planning guidance to his staff:

"From a study of the map it looks like we can defend our sector with the FEBA well forward of Red Diamond Road along the forward slopes of the ridges or generally just forward of Red Diamond Road. Consider both of these positions. Although Bush Hill is the highest spot, the decisive terrain in our sector is Area 3. I will issue my order on Bush Hill at 1200 hours and move the TF forward not later than 1300 hours to give the companies sufficient time to organize their positions before it gets dark. S3, you and the Arty LO start at the right coordinating point and make a recon of the forward position. I will use the observation helicopter to recon the rear area, then join you on the FEBA. S2, start forward of the FEBA and check those avenues of approach that you just gave us. Also be prepared to submit recommendations for the COPL. I want staff recommendations by 1130 hours on Bush Hill. TF Liaison Officer, inform the XO of my guidance and have him send the special staff officers forward for recon. Further, I want the armored cavalry platoon forward to Red Diamond Road to secure the COPL until companies are in position. Have the platoon leader contact the S2 for additional instructions. I also want the company commanders to report to Bush Hill by 1130 hours. S3, coordinate with the staff when they arrive."

COURSES OF ACTION

Before we follow the commander on his reconnaissance of the defense position, we should examine the courses of action that he desires the staff to consider during their estimates.

Courses of action in the defense at battalion level will normally place more emphasis on how to utilize the terrain along the trace of the FEBA to provide the best possible defensive



Figure 1. Defense Sector.

position rather than determining initially the forces necessary in the forward area. As the battalion commander visualizes each course of action, he will mentally visualize the number of platoons that will be required to defend each trace of the FEBA. This often will indicate the number of forward companies required to occupy the FEBA in each course of action. The course of action may also include the location of the reserve units. However, this will often be determined during the analysis of each course of action, since the location of the FEBA will influence the determination of the rearmost limit of responsibility of the forward companies. The refinement of the courses of action to determine which trace of the FEBA offers the best prospect for success will be accomplished during the analysis and the comparison of the courses of action. This refinement must also develop as an element of each course of action, the effect of each feasible FEBA on the available reserves, and the ability of the Bn to defend the decisive terrain within its sector. The major differences between the two courses of action selected by the commander are:

Course of action 1, places the FEBA well forward on the military crest of the ridges running perpendicular to the FEBA and requires at least five platoons to organize the ground. This locates a portion of the left side of the FEBA in the woods, which will make the defense position in this area difficult for the Aggressor to identify.

Course of action 2, places the FEBA along the military crest of the ridge running generally along Red Diamond Road and requires at least four platoons to organize the ground. This locates the majority of the FEBA in the open and fails to take maximum advantage of the woods as concealment.

Although the commander visualizes the number of platoons required for each course of action, he may or may not visualize the boundary(ies) between forward companies at this time. Terrain will influence the location of the boundaries, the number of companies employed forward, and their organization for combat. In this situation, the three irregular ridges running perpendicular to the FEBA will make occupying the FEBA with three companies difficult.

After receipt of the commander's planning guidance, the commander and staff departed for the defensive area. During the reconnaissance of the defensive area the commander verifies the information on his map, confirms and/or changes the courses of action visualized, and war games each course of action against the Aggressor's attack capability. For ease in mentally war gaming the battle as it may take place, the commander accomplishes it in three phases. First, the Aggressor's approach to the defensive position until he is stopped and repelled. The commander may start forward of the COPL and work back through the COPL toward the FEBA. The critical point in the conduct of the defense is from the point that the Aggressor comes within observation and effective range of the M-14 rifle (460 meters) positioned along the FEBA. Because the defender is in a static position, the commander visualizes the action that must take place to counter the Aggressor's advance toward the FEBA. The ability of the defender to place effective fires on the attacker and to increase the volume of effective fires to the point that the attack is repelled is based on observed fires reinforced by obstacles. The commander should consider the ability of the forward units to observe the Aggressor's movements and their use of fires and obstacles to repel the attack.

The second step is to visualize the battle depth to the point where the forward companies would still have the capability of slowing an attack if the Aggressor is successful in penetrating the FEBA. The employment of the battalion reserve is then visualized to destroy the Aggressor and restore the FEBA. This analysis should include an evaluation of terrain and the type force (reserve) that would best accomplish the mission.

The last step in analyzing each course of action is the visualization of the action that would have to be taken if the Aggressor were not stopped, slowed, or contained by the forward companies. This develops the need for blocking positions (in depth) to insure retention of key

terrain; the size of the reserve required, and the limit that the Aggressor can penetrate and be contained by the battalion.

The commander mentally war games course of action 2 as follows:

"This course of action will require four platoons along the FEBA. As the Aggressor attacks, the terrain will initially favor the defender as the Aggressor will be required to attack through woods that will restrict his maneuver and increase his problem of control. The heavy woods and underbrush in the draws will further restrict the movement of vehicles to the ridges. The COP position designed by Bde does not provide good observation in our sector. To insure early warning and prevent infiltration, the roads should be blocked by obstacles and the woods covered by Infantry. To reduce the number of personnel needed to occupy the COPL, AT and AP mines should be employed by the COPL force. A COP of two platoons reinforced with tanks should be capable of covering the sector and slowing the Aggressor's advance. There appears to be a few routes through the woods from the COPL to the FEBA for the carriers. This will allow the COP force to use their carriers. As the Aggressor continues to move toward the FEBA and forces the COP to withdraw, we may lose contact with the Aggressor in view of the concealment provided him by the woods. If this happens, patrols and air OPs must provide information on his activities. As the Aggressor moves toward the FEBA, we will pick up his movements and direct long range fires on him except in the area of Box Springs Road. From this trace the small hills forward of the FEBA become less important in view of their distance from the FEBA. Artillery, mortar, and long range direct fire weapons can be employed to deny him the use of these hills. This course of action also provides the Aggressor's attacking force with concealment in the center portion of our position. The draws to the east and west of Box Springs Road will have to be covered by Infantry and AT weapons. I may have to place barrages or mines in these draws. Tanks can be used very effectively from positions along Red Diamond Road. Observation and fields of fire from this position will allow the forward companies to receive maximum grazing fires.

"If the Aggressor penetrates the forward positions, the forward companies will have to utilize terrain astride or just north of Red Diamond Road to stop, slow, or contain the Aggressor's attack. I will need a company-size reserve consisting of tanks and Infantry to restore the FEBA. They may have to counterattack uphill to regain control of the ridge running generally along RED DIAMOND Road.

"If the forward companies fail to stop, slow, or contain the Aggressor's attack, then a company-size reserve will be needed to block the Aggressor's movement forward of key terrain feature 3 from positions on key terrain features 1 and 2. If Aggressor penetrates on a broad front beyond the depth of the forward companies, battalion will not have sufficient combat power to destroy the Aggressor and brigade will have to counterattack to restore the FEBA. In case we cannot hold on to key terrain feature 1 and 2, we must plan on withdrawing the TF to key terrain feature 3."

If a commander will war game each course of action he will gain an insight as to how the battle may be fought and the requirements for a particular unit or weapon in the security, forward defense, and reserve echelons. In war gaming this course of action the commander considered the COP force, use of tanks, depth of the forward defense area, retention of key terrain, use of battalion reserve, employment of the AT platoon, mines and barrages.

You probably noticed that the battalion commander did not consider the employment of nuclear weapons in his war gaming. This is because at battalion level they will normally affect each course of action equally. However, the commander should visualize their employment throughout this step in the development of his plan. The employment of nuclear rounds, which is published in the fire support plan, will be planned to support the three echelons of defense. The minimum safe distance associated with the Davy Crockett requires that it be fired approxi-

mately 1300 meters forward of friendly troops. I have taken the best condition of warned, protected, negligible risk. This places the requirement on the battalion to be capable of sensing a target well forward of the FEBA and engaging it. The use of the Davy Crockett in support of the counterattack is restricted to employment forward of the FEBA on the Aggressor's reserve or to create obstacles to restrict his capability to reinforce. Fires within the defensive area will be planned to support the retention of key terrain features 1 and 2 and the withdrawal to terrain feature 3.

The commander should analyze the effects of Aggressor employment of nuclear weapons as it affects each course of action. In this situation, the battalion will be equally vulnerable to enemy nuclear weapons, whether C/A 1 or 2 is followed.

After completing his analysis the Commander compared the courses of action using terrain, Aggressor attack capability, and own capabilities as those factors that had a major bearing on a sound tactical solution in this situation.

From a terrain view point, C/A 1 and 2 differ considerably in the vicinity of the FEBA. In this instance, the irregular terrain and woods along the military crest of the ridges restrict fields of fire and observation in C/A 1. However, this course of action provides good concealment, utilizes obstacles effectively, and provides more depth to the defense position than C/A 2. Conversely, C/A 2 provides better fields of fire and observation along the FEBA.

From the viewpoint of the Aggressor attack capability, course of action 1 will provide a FEBA that will be hard to identify in the center and eastern portion because of the woods. It controls the ridge allowing our counterattacking force to attack generally downhill. On the other hand, C/A 2 will provide a FEBA that will be more difficult to penetrate because of the open terrain and the good fields of fire.

Own capabilities favor C/A 2 because it requires less force on the FEBA and provides the TF with the capability of retaining a larger reserve than C/A 1.

The commander's comparison favors course of action 2 which places the FEBA along the ridge running generally along Red Diamond Road.

After the commander tentatively completes his estimate he meets with his staff at Bush Hill and receives their recommendations.

S3: "Sir, we recommend that the TF defend with two companies reinforced with tanks just forward of Red Diamond Road and that the reserve occupy blocking positions on key terrain feature 1 and 2. Furthermore, one of the reserve companies should occupy and control the COPL."

S2: "Sir, the area assigned by brigade for the COPL will not provide good observation and fields of fire. The woods restrict ground observation throughout the area. The S3 has my recommendations as to forces to occupy the COP. Also, my reconnaissance did not change anything that we had previously discussed pertaining to key terrain, avenues of approach, trafficability, and obstacles."

S4: "Sir, I have coordinated with brigade and we will be able to obtain barrier materials direct from Fort Benning. Brigade has requested the total amount of barrier materials required. I submitted a tentative request and told them that a corrected request would be submitted as soon as you announced your plan. I expect to arrange delivery right to the forward company areas. All the vehicles closed into the assembly area OK. However, we had 5 wheeled vehicles and 4 APC's break down. I recommend that emphasis be placed on maintenance as soon as the position is prepared."

S1: "Sir, brigade reported that replacements will probably not be available until after 21 June. At this time we have no personnel problems."

At the completion of the staff briefings the commander reevaluates his estimate in light of the additional information and then makes a decision and announces it to his staff. The decision should contain the WHO, WHAT, WHEN, WHERE and HOW.

DECISION

"TF 2/76 will defend by 1400 hours along this line. Co B reinforced with a platoon of tanks will be on the right and Co A reinforced with a platoon of tanks will be on the left; priority of fires, Co A, Co C, and A2/4 Armor (-) will occupy positions on key terrain features 1 and 2.

"Right now, I think that the barrages should be located in the draws astride Box Springs Road and on the roads leading into our position. However, I will make a decision after I see the unit fire plans. The terrain may prevent the forward companies from exchanging FPFs. If this happens we may have to mine the area between the forward companies. Plan for the use of the 2 DC rounds that have been allocated per day to support the defense. Retain the AT platoon under TF control and position them to support TM A and B. In view of the time available to prepare positions and obstacles, I want a portion of the reserve to provide the COP force. Have the armored cavalry platoon screen forward of the COPL and maintain contact with the GOP. Upon withdrawal to the COPL, attach the armored cavalry platoon to the COP force. When the COP withdraws, I want the armored cavalry platoon assigned rear area security missions. I want all vehicles left forward under company control if the companies can conceal them and perform the necessary maintenance in their area. If not, place them under battalion control and locate them to the rear of Underwood Road. Check the security portion of the battalion SOP, and make sure that all personnel are aware of the security requirements."

To understand the commander's decision and concept we should take it apart and examine it as the staff will have to.

Time. The commander stated that the TF would defend by 1400 hours. This means from 1200 hours (the time the order will be issued) to 1400 hours, the TF must move from this assembly area and arrive on position. Movement of the companies forward will be coordinated with the battalion XO and unit commanders. The TF CP, aid station, combat trains, and combat support elements will move forward under the supervision of the staff as soon as possible.

Tanks. When tanks are attached to a battalion in defense, all or a major portion of them may be retained in reserve in order to participate in counterattacks and provide the battalion with antitank defense in depth. When necessary, one or more tank platoons may be attached to the forward rifle companies to increase their antitank capability. If all tanks are retained under battalion control, a major portion of them may be employed forward under Bn control to provide antitank fires forward of the FEBA; antitank defense to the flanks and depth within the battle area. When positioning these tanks to provide antitank protection in depth within the battle area, the commander must consider the requirement of regrouping them for the counterattack.

In this situation the commander attached a tank platoon to each of the forward companies for the following reasons:

Each rifle company has only two AT weapons that can effectively fire at a range greater than 450 meters. These are the 106mm RR.

The Battalion's ENTAC is ineffective when fired at a target closer than 400 meters. In addition the gunner is more accurate at ranges greater than 1,000 meters. The terrain along the FEBA does not allow engaging targets at a range in excess of 1,000 meters. In view of the

woods and the rolling terrain along the FEBA the commander decided not to plan his AT defense in the forward area around the ENTAC.

By attaching a platoon of tanks to each forward company, the TF Commander has provided the company commanders with five AT weapons without a minimum range restriction that can be employed throughout their area to strengthen their defense.

Reserve. In the area defense the commander uses his reserve to influence the conduct of the battle and to take the initiative away from the Aggressor by counteracting his maneuver. To accomplish this the battalion must retain an adequate reserve. In this situation the commander retained one tank platoon and three infantry platoons in reserve under the control of two company headquarters. The commander utilized both control headquarters for the following reasons:

The primary mission of the reserve in the area defense is to restore the FEBA if penetrated. To accomplish this, the reserve is organized for combat and positioned either in an assembly area or blocking positions to facilitate the accomplishment of the counterattack. It is desirable to have the reserve under one control headquarters for the conduct of the counterattack. However, this is not an overriding requirement because the battalion commander will normally, personally coordinate the execution of the counterattack and has the communications to control more than one reserve unit.

Additionally, the terrain to the rear of the FEBA does not permit blocking a penetration in either forward team area from a single position. This requires that the reserve be split initially to occupy key terrain features 1 and 2. With this requirement to split the reserve, it is to the advantage of the commander to utilize both control headquarters and to attach a platoon of Infantry to the tank company.

The use of both control headquarters gives the commander more flexibility in employing the reserve to occupy the COPL, block, cover gaps, conduct patrols, and provide rear area security.

Normally, for the battalion to contain a penetration and counterattack, the forward companies must contain the penetrations. In view of this, the reserve must be positioned where they can react quickly. To accomplish this, the commander located the reserve well forward on key terrain feature 1 and 2 where they can provide limited fire support to the forward companies and still be in a position to rapidly conduct a counterattack. The mobility of the reserve will greatly influence the distance that they should be located from the forward defense area. A mechanized unit could afford to place the reserve further to the rear if the APC can be used to provide mobility. An example of this would be on Underwood Ridge or in the woods between Underwood Ridge and key terrain features 1 and 2.

If the forward companies are not capable of stopping the Aggressor attack then the task force will have to block the penetration from positions on key terrain features 1, 2, or 3. The decisive terrain in this situation is the Underwood Road Ridge because this is the last terrain feature from which the battalions can accomplish their mission. Any penetration that reaches the battalion reserve area will normally have to be reduced by the brigade reserve.

In addition to counterattacking and blocking, the reserve can be used to cover gaps between battalions. This will have to be coordinated with adjacent units and will be one of the plans developed after all units are on position.

To insure freedom of action and to defend the battle area against an attack by infiltration, vertical assault, and/or guerrilla attack the reserve area must be secured. This can be accomplished by establishing road blocks, coordination of local security, patrols, and employment of radar.

If time permits the battalion will construct antihelicopter obstacles on Underwood Road Ridge by the use of poles and wire.

COPL.

The commander has to make a decision as to whether the forward companies or the reserve will furnish the forces to man and control the COP. Factors that the commander should consider before making this decision are as follows:

Flow of information from the COP to the TF CP. If the forward companies control the COP force, then the COP reports to the forward company commander on the company net who in turn has to relay the information to the TF commander. Also, the authority to withdraw the COP is delegated to the forward company commander. If an element from the reserve is employed on the COPL, then the information is reported directly to TF, which retains control of the COP force.

Coordination. Coordination by the COP force must be made laterally as well as with the units along the FEBA. If the forward companies control the COP force then coordination is effected at the coordinating point placed on the lateral boundary between companies. If the reserve force furnished the COP then this item of coordination is eliminated. Actually, the major point is the coordination of the withdrawal through the FEBA.

Withdrawal. If the forward companies control the COP, then the company commander can coordinate their withdrawal with the forces along the FEBA with less difficulty than if the reserve commander has to coordinate with two or three company commanders along the FEBA to effect withdrawal.

Task assigned to units. Many times the assignment of task will influence the selection of forces to occupy the COP, i. e., preparation of positions, obstacles, rehearsals of counter-attack plans, etc.

Time. Time available ties in very closely with the task to be accomplished prior to the Aggressor attacking the position. If time is limited, then the forward units should be given priority in the preparation of positions and the reserve should furnish the COP force.

In this situation the commander assigned the mission of furnishing the COP force to the reserve because of the time available and the task required to be completed prior to withdrawal of the GOP force.

Time. With less than three days to prepare for the defense the commander placed emphasis on the preparation of forward positions. The reserve is large enough to prepare reserve blocking positions and also furnish the COP. Even if the rear positions are not completed prior to the Aggressor's attack the reserve can still work on their positions without interference from direct fire.

Obstacles. In view of the lack of any good natural obstacle along or forward of the FEBA, a complete AT barrier trace will have to be constructed. This will require placing across the entire front some type of obstacle to assist in stopping and/or breaking up the Aggressor's attack. These obstacles can be constructed and emplaced by the reserve or forward units. However, inasmuch as the forward units will utilize these obstacles in defending their assigned sectors, it is to their advantage to construct and/or emplace them.

Armored Cavalry Platoon. The commander decided to initially have the armored cavalry platoon maintain contact with the GOP, then the Aggressor, and upon withdrawal to the COPL attach it to the COP. By attaching the armored cavalry platoon to the COP force the commander

provides additional combat power on the COPL without taking it from the force preparing positions within the battle area. This will provide the COP force commander with a greater capability to prevent infiltration through the woods. By improving the security forward of the FEBA the commander reduces the Aggressor's capability to achieve surprise.

After withdrawal behind the FEBA the commander directed that the armored cavalry platoon be employed on rear area security missions. This will release reserve units from this task and provide the commander with a more responsive reserve force with which to maintain the initiative.

AT Plat.

The AT platoon leader, after coordinating with the tank company commander, recommended to the TF commander that his platoon be employed in general support.

The AT platoon, from positions to the rear of Red Diamond Road, will be able to provide limited support to the forward defensive area. However, positions on key terrain features 1, 2, and 3 will provide excellent observation and adequate range for the employment of this platoon in support of the reserve and to add depth to the battalion AT Plan.

Although the commander did not mention the employment of the Mort/DC Platoon, engineer support, artillery support, or the ground surveillance section in his decision and concept, it does not minimize their contribution to the scheme of defense. Their recommendations were considered by the unit staff prior to making their recommendations to the TF commander. Missions to be assigned and/or employment of this combat power will be developed as the commander and staff continue preparation for the defense.

The S3 quickly translates the commander's decision and concept into an OPORD and the commander issued an oral order to his assembled staff and unit commanders at 1200 hours on BUSH Hill (see Figure 3 for graphic portion of OPORD). After issuing the OPORD, the commander turned his attention to completing his plan for the defense. (Figure 3)

The S3 and engineer platoon leader have been working on the obstacle plan and had practically completed it when the commander requested to be briefed. The S3 briefed the commander as follows: (Figure 4)

"Sir, we have planned three defensive minefields to block Infantry and tanks. All of these minefields can be covered by both direct and indirect fire. This will require each forward company to lay approximately 900 meters of mines. We can lay these mines in three days if we use a 1-2-4 density. However, I do not think that we need a minefield 100 meters in depth in view of the woods just forward of the defensive position. I recommend that we install 50 meters of mines and wherever possible cut trees in the minefield to form an abatis and then boobytrap the trees.

"There are two trails that run through the woods just forward of the FEBA that we think should be blocked with an abatis. The engineer platoon can construct the abatis as well as boobytrap the trees within the minefields.

"The engineer platoon leader recommends tank ditches in the open areas rather than minefields. They will be easier to construct than minefields and will be effective in stopping tanks. The engineer platoon has one dozer with them. To reinforce our fires against an attack by Infantry in these areas we will locate AT and AP mines in, forward, and between the ditches. This will not be a standard minefield.

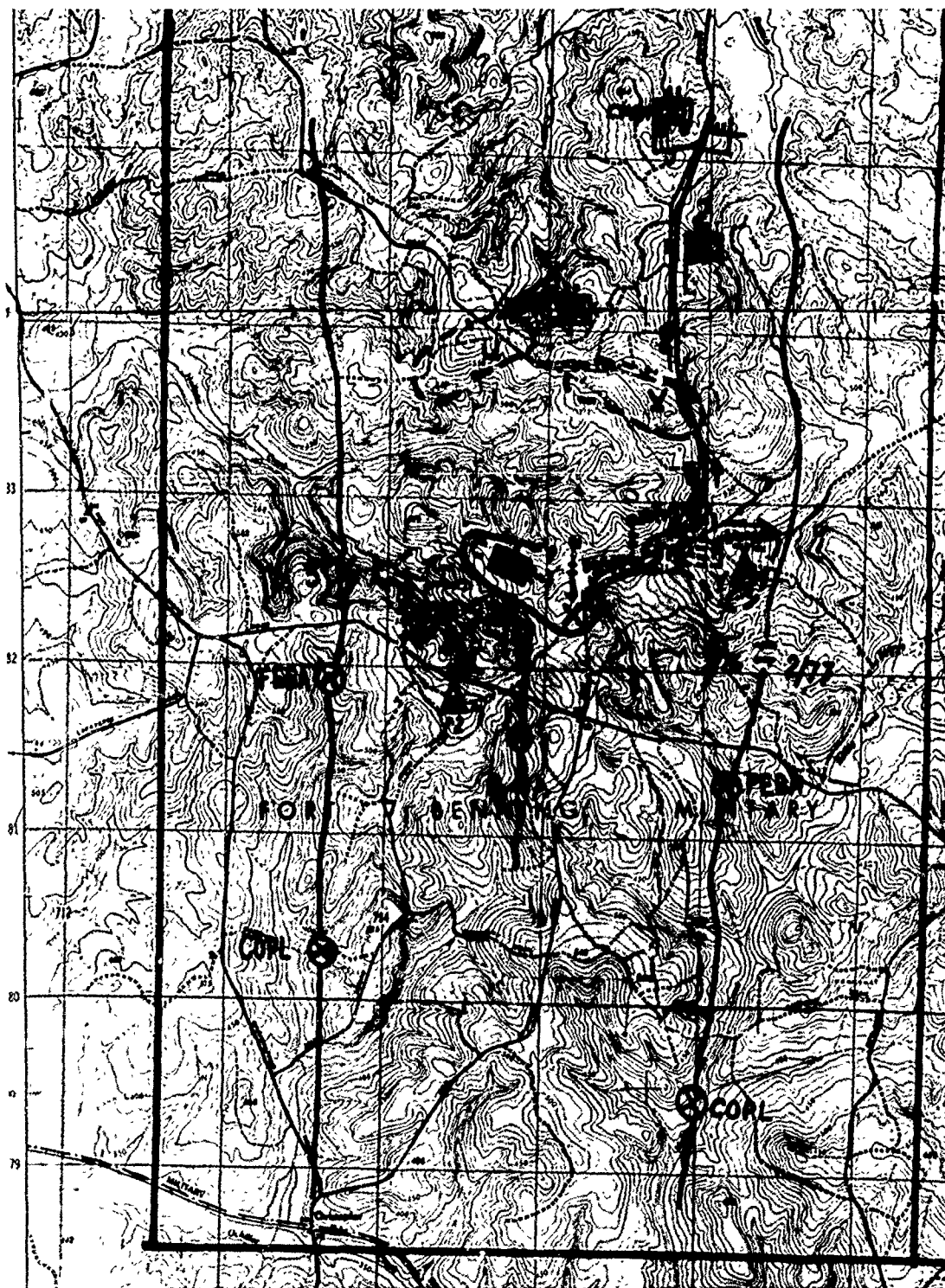


Figure 3. Graphic Portion of Operation Order.

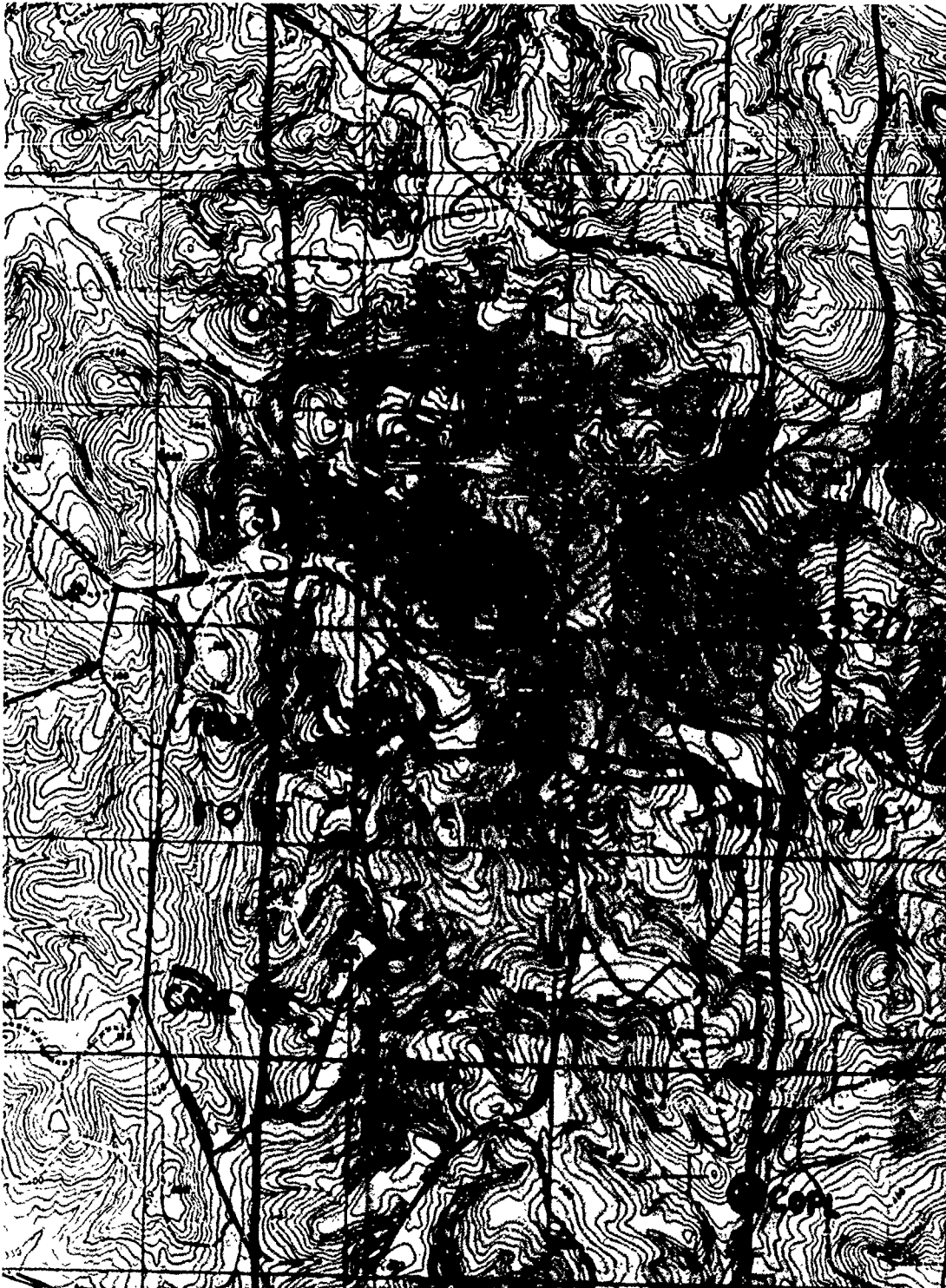


Figure 4. Portion of Obstacle Plan.

"We have tentatively coordinated these obstacles with the company commanders. If you approve these obstacles, we will coordinate them on the ground with the company commanders within the next hour."

In evaluating the recommendations of his staff the commander should be guided by the objective of an obstacle plan, which is to reinforce the natural defensive characteristics of the terrain, aid in breaking up an attack against the FEBA, add depth to the battle area, and to reinforce the coordinated fire plan.

After considering these factors the commander approved the obstacles recommended and instructed the S3 to insure that the location of the obstacles be checked closely with the forward company commanders. Some of these obstacles appear to be too close to the FEBA. The commander knows that these obstacles should not be further than 450 meters forward of the FEBA or closer than 100 meters if he is going to effectively cover them by fire. This requirement is dictated by the range of the weapons located along the FEBA and the requirement to maintain observation over the obstacles. The location of these obstacles will be further coordinated with the employment of barrages and tactical wire.

In addition to the obstacles recommended the commander directed the following:

"Place a minefield in front of key terrain feature 2. Leave a lane so we can use Box Springs Road. Coordinate this with the counterattack plans.

"I want only Claymore weapons used for local security behind the forward platoon; therefore, AT and AP mines will not be used behind the forward platoons except in standard minefields. This includes the reserve platoon of Companies A and B. If we have to counterattack, I do not want to do it through our own mines.

"I want unit commanders to emphasize the preparation of positions for the next 24 hours. I want the engineer platoon to cut logs for use as overhead cover as soon as possible. S3, you control the cutting of trees. If the forward unit commanders have to cut trees to get fields of fire, then use these logs first. Coordinate this with the company commanders.

"As soon as brigade approves the obstacle plan, I will assign a priority for each obstacle. I want all obstacles and positions prepared within the next 72 hours. If the 25th Armored Division and the GOP force can give us additional time for the preparation of positions then we will add to and improve both our positions and obstacles. The S4 has already started working on the requirements for barrier material and mines. Coordinate this with him immediately so that we receive the necessary barrier material and mines prior to the time the forward companies are ready to start work.

"The engineer platoon can start on the tank ditches immediately with priority to TM B's sector. I want logs cut for overhead protection before they start on the abatis."

After coordinating the obstacle plan, the commander turned his attention toward the use of vehicles during the conduct of the defense. The commander is primarily concerned with the removal of unnecessary vehicles from the forward defense area to reduce their vulnerability to enemy fires.

The S3 and S4 are presently coordinating this matter. After analyzing the commander's concept and oral order they completed the following tentative breakdown of vehicles. This breakdown is based on a tank platoon being attached to each forward company and the reserve companies consisting of two platoons each.

<u>LOCATION</u>	<u>TYPE VEHICLES</u>		<u>TOTAL</u>
	<u>WHEELED</u>	<u>TRACKED</u>	
Forward Companies (2)	10(20)	25(50)	70
Reserve Companies			
Mech Co	10	16	26
Tank Co	5	15	20
Hq & Hq Co & Attachments (Bn Area)	35	17	52
Combat Trains	10	2	12
Field Trains	29		29
Total	109	100	209

NOTES:

1. These figures are based on 100% availability of vehicles organic or attached to the following units of TF 2/76: 2/76 Mech Bn, A2/4 Armor (6 vehicles attached from battalion), Arty LO and FOs, and the engineer platoon in DS.
2. The number of vehicles in the combat and field trains will vary with the situation.
3. Vehicles listed in the battalion area are not attached to a company or located in the combat trains and include the vehicles of the engineer platoon in DS.

In arriving at a recommendation the S3 and S4 considered the following factors:

Mission. The TF has been directed to conduct an area defense and the commander's decision and concept does not visualize any movement by the forward companies. However, the reserve will plan for and rehearse counterattack plans to restore the FEBA. During the conduct of any counterattack it will be to the advantage of the TF to have all non-essential vehicles to the rear of the blocking force and out of the path of the counterattacking force. This will prevent placing restrictions on the counterattacking force as to their use of fire support or maneuver.

Vehicle density. With the exception of trailers, each of the forward teams will have 35 vehicles located in their areas. Of this total, each team has 11 combat vehicles or weapons carriers (5 tanks, 4 APCs for 81mm mortars, and 2 106RR). To the rear of the forward teams and forward of the TF rear boundary there will be located 110 vehicles. From the viewpoint of numbers and space the only critical area of vehicle density is in the forward area.

Cover and concealment within the battle area. Cover and concealment for vehicles located north of Red Diamond Road is excellent. The ridges provide good protection from direct fire weapons and the woods will provide limited protection from high angle fire. Concealment is available except on the ridges. Trafficability within the wooded areas for wheeled and tracked vehicles is excellent and will permit vehicles to be dispersed throughout.

Vulnerability of vehicles. All of the vehicles within the TF are vulnerable to certain weapons. At the present time Aggressor has air superiority and indications are that he will continue to support his attack with close air support. There are no indications that the Aggressor has other than normal artillery support. The S3 analyzed their vulnerability as follows:

The tank is the least vulnerable of all the vehicles supporting the defense. Artillery has little effect on the tank unless employed in direct fire role. However, aircraft can disable the

tank with the use of bombs, napalm, and rockets. The best defense that a tank has against aircraft is concealment, dispersion, and cover. By being positioned in defilade the tank will be able to use limited mobility as a defensive measure.

The APC and wheeled vehicles are vulnerable to: rockets, bombs, napalm, machinegun fire, and quick and VT fused artillery fire. The APC provides good protection from VT fused fire except from heavy caliber (8-in - 175mm) artillery fire. VT fused fires, to be effective against the APC, must explode directly over the carrier to damage the hull or the tracks.

Security of vehicles. Security of vehicles during the defense is the responsibility of each unit and will normally be performed by the drivers within the unit area. The APCs of the rifle platoons may be positioned to the rear of the defensive position to provide flank and rear security for the platoons. The closer that the vehicles are positioned to the personnel that use them the easier it is to secure them against infiltrators. However, if the FEBA is penetrated they must be moved to prevent their capture and to insure that they are not destroyed by fire delivered by the Aggressor and the defender. To eliminate the requirement to move them during the development of the penetration or execution of the counterattack, it is desirable to place them behind the reserve positions that will be used to contain the penetrations.

Use of .50 caliber MG. The .50 caliber machinegun mounted on the APC is for close-in protection and air defense of the APC. In a hasty defense it could be employed to supplement ground fires along the FEBA and can be fired from either vehicular or ground mount. In this situation, with the Aggressor having air superiority and the TF defending on a normal frontage with time to coordinate fires, the S3 and S4 recommended that the .50 caliber MG mounted on the APC not be utilized on position at the expense of providing close-in protection and air defense for the carriers.

Resupply and evacuation. In the defense the APC is particularly useful for resupply and evacuation. Although the combat trains will normally deliver supplies to the companies, during periods of heavy shelling or when open terrain must be covered the APC is the most practical vehicle to be used.

Maintenance. In mechanized and tank units each company has the capability of performing maintenance on their organic vehicles. During combat this is normally accomplished in the company trains and there is no requirement to consolidate all of the maintenance personnel under the TF motor officer. The only disadvantage to performing maintenance well forward is that personnel and equipment may be exposed to enemy fire.

After completing their analysis of this area the S3 and S4 recommended that vehicles in the forward defensive area be limited to:

*Tanks	All
Track Vehicles (APC)	1 - CO
	1 - Med Amb
	3 - one each Plat
	<u>4 - 81 mortar section</u>
Total	9
Wheeled	2 - 106RR
	<u>1 - 1/4-ton trk</u>
Total	3

*Included to show vehicle density.

The S3 and S4 further recommended that the balance of vehicles remain under Co control, but located to the rear of the key terrain features 1 and 2. This restriction on the number and type of vehicles in the forward area will not prohibit the company commander from using vehicles located to the rear for resupply and maintenance. Vehicles used for supply and maintenance will be in the area for a limited period of time and will not interfere with the conduct of the defense.

The time is now 1700 hours. Company commanders have organized their positions and submitted to TF headquarters a copy of their unit fire plans. (Figure 5) The commander and staff must now analyze these plans to insure that they support the plan of defense. You will recall that in the area defense the commander places his units on the ground and coordinates their fires to stop the Aggressor's attack forward of the FEBA. Defensive fires are divided into four phases according to their location and time of delivery.

Long-range fires. These fires are planned to engage the Aggressor as early as possible, to inflict casualties, to delay his advance, and disrupt his organization. They consist of the fires of those supporting weapons within the battle area capable of delivering long-range fire without disclosing the forward elements of the battle area and the fire of the weapons organic and attached to the combat outpost. When the Aggressor comes within range, available long-range fires are delivered on known or suspected targets. These fires may be observed or unobserved.

Close defensive fires. These are fires planned to destroy the integrity of the attacking force before an assault is possible, by inflicting the greatest possible number of casualties, disrupting command control and communications, by reducing observation, and by neutralizing hostile supporting weapons. They consist of the fire of all individual and supporting weapons which can be brought to bear on the attacking force from the time he enters his attack positions throughout the conduct of his attack until he launches his assault. Weapons open fire during the close defensive fire phase when the enemy comes within range of the particular weapons. If it appears the Aggressor is unaware of the location of the battle area, to gain surprise the fire of all flat trajectory weapons except designated tanks and recoilless rifles may be withheld until the Aggressor is within the effective range of the predominant weapon, the M-14 rifle.

Final protective fires. These fires are planned to break up the Aggressor assault on the battle area by placing a band of concentrated fire across the front of the battle area just forward of the FEBA. They consist of the prearranged fires of supporting weapons which can be delivered under any condition of visibility, including the final protective fires of machineguns, the barrages of mortars and artillery, supplemented by the fire of all other weapons capable of delivering effective fire on the assaulting force. Final protective fires are delivered on call. Normally, the frontline company commanders and platoon leaders are authorized to call for these fires. Only those supporting weapons whose final protective fires are in front of the threatened unit fire their assigned final protective fires. All other available weapons supplement or reinforce the final protective fires forward of the threatened unit.

Fires within the battle area. These are fires planned behind the FEBA to limit possible penetrations within the battle area and to support counterattacks. All individual and supporting weapons capable of firing into the penetrated area will engage in the fires within the battle area. Fires are planned on key terrain features and likely areas of penetration. Fires to support counterattacks are planned and coordinated by the battalion commander and his staff. During the conduct of the counterattack, the commanders of the maneuver element may call for these fires.

After analyzing the company fire plans the commander approved them with the exception of the gaps that exist between the two forward platoons of Co A and between the forward companies. Fires planned in these areas will have to be coordinated with the forward companies to insure better coverage of these areas and to insure that gaps do not exist in the TF fire plan.

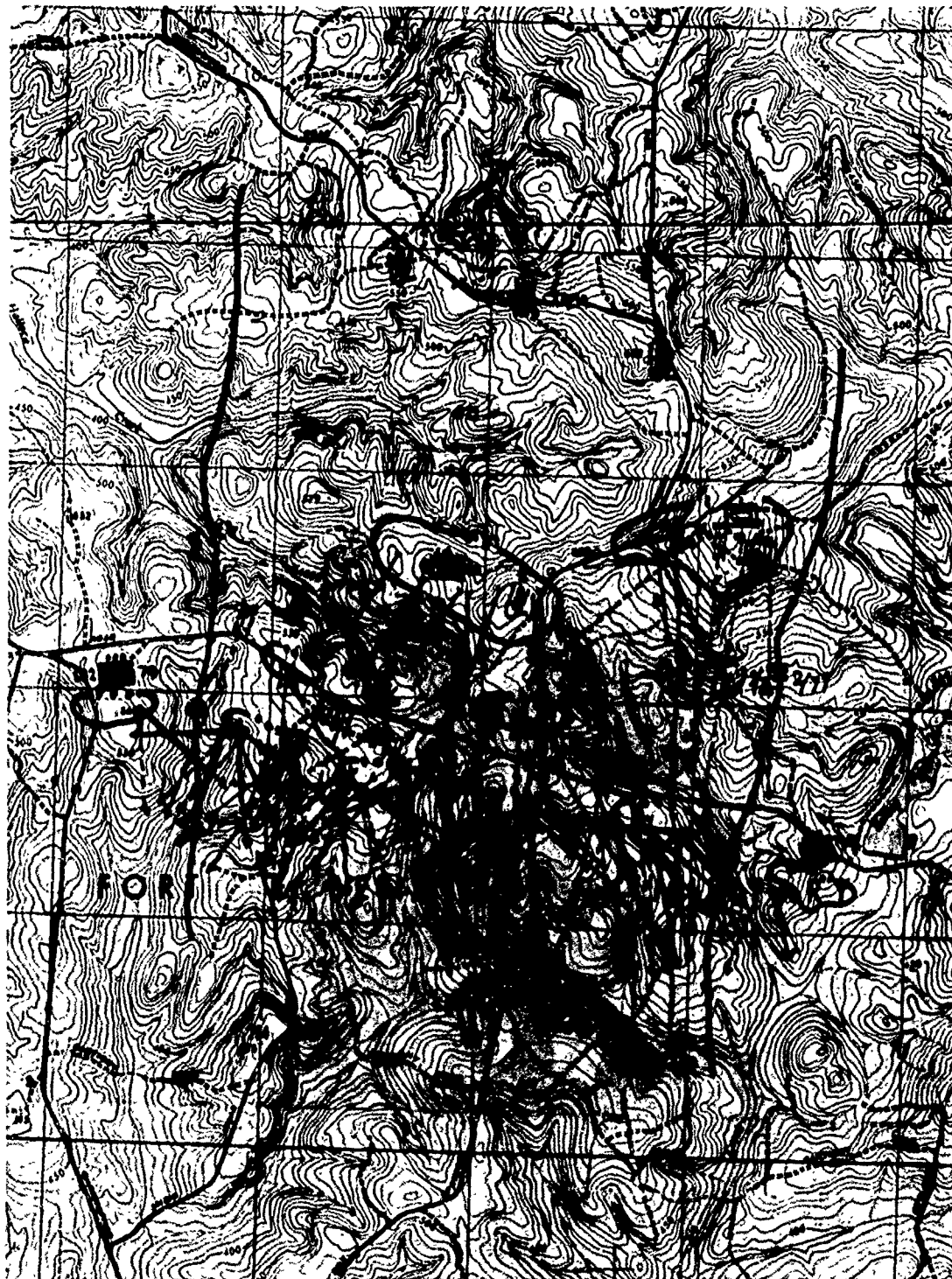


Figure 5. Unit Fire Plan.

Based on an analysis of the fire plans, the commander allocated the three barrages available to the TF as follows:

The 4.2-in mortar barrages will be positioned between the forward companies.

One 105 howitzer barrage will be allocated to each of the forward companies.

An analysis of each company fire plan provides Lt Col, TF 2/76, with information on the location of FPLs, AT fires, company mortar barrages, and indirect fires planned along the FEBEA and in depth. When this information is analyzed and compared with the TF obstacle plan it allows the commander to quickly visualize the amount and type of combat power positioned to cover approaches into the sector.

After approval, company fire plans are retained at Bn level and become a part of the coordinated Battalion Fire Plan. Normally, they are not combined on one overlay, but are used separately as the need arises. If a unit occupies a position for a prolonged period of time then a consolidated Battalion Fire Plan may be prepared. If prepared, distribution is not made to the next higher headquarters unless required.

The TF fire support plan is prepared concurrently with the plan of defense. As the FSC, the artillery LO will coordinate the planning of both mortar and artillery fires for the defense. In addition, this plan will include those fires planned for the DC and other nuclear rounds. The fire support plan when completed will be issued as an annex to the defense order.

The TF has been on position for approximately 4 hours and the commander continues to supervise the organization of the defensive position. Concurrently, the staff is occupied with the preparation of the defense order to confirm oral orders previously issued by the commander and to provide orders for the conduct of the defense.

The preparation of the OPORD is a joint effort of the TF staff with the S3 having primary staff responsibility for its preparation. The major task confronting the staff will be to prepare the following annexes that will accompany the TF defense order:

Fire Support Plan

Surveillance Plan

Patrol Plan

Obstacle Plan

Counterattack Plan

CONCLUSION

I have discussed a few of the actions and decisions made by the Task Force Commander as he planned for the defense of his assigned sector. Actually, I have only scratched the surface of the knowledge and experience required for a commander to plan and conduct a successful defensive operation.

In conclusion, let me say that it is the job of all of us to challenge the mind of the young officer in the area of tactics. We must teach him to apply the principles of war and the fundamentals of defense in an effort to produce the best defensive plan. He must learn to think, to reason, and question why in the application of these principles.

The real challenge to all of us is to develop better and simpler ways to teach tactics. We are presently seeking better ways. We therefore welcome any ideas that you may have to help us develop a better method of teaching tactics.

SECTION III. AIRMOBILE OPERATIONS - INFANTRY BRIGADE

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Instructor, Brigade and Battalion Operations Department

The Infantryman is mobile at the rate of 1 1/2 to 4 kilometers per hour if he must walk. Trucks and carriers can increase this rate up to 40 kilometers per hour on roads or over ideal terrain. This degree of mobility is no improvement over that of World War II. Army airlift aviation provides an increase in mobility to meet the requirements of the modern battlefield and to reduce reaction time. Mobility can best be measured in terms of reaction time which of course is the time from the initial concept to execution. Commanders must now consider the possibilities of 1 1/2 kilometers per minute rather than 1 1/2 kilometers per hour. They may calculate the availability of forces in greatly reduced times from more distant locations.

Viewing an airmobile operation as one in which combat forces and their equipment move about the battlefield in aerial vehicles under control of a ground force commander to engage in ground combat, recognize that the goal of the Army is to have all ground combat units prepared for rapid employment by air as well as ground means and unit standing operating procedures developed to the degree that airmobile operations do not fall in the category of special operations.

Airmobile operations are similar to other ground combat operations - but differ in that:

1. They are usually executed in lightly defended areas or after a preassault nuclear or non-nuclear preparation with the advantage of initial tactical surprise.
2. Airmobile forces can land directly on or adjacent to their objectives.
3. Airmobile forces are particularly vulnerable during landing and assembly.
4. The types and amounts of heavy equipment that can be taken into the objective area are limited. (CH-47 Maximum ACL approximately 8,000 pounds, UH-1D Maximum ACL approximately 3,000 pounds.)
5. Airmobile forces have the ability to readily conduct operations in otherwise inaccessible areas.
6. Airmobile forces, once on the ground are particularly vulnerable to enemy armor due to their limited ground mobility and firepower in the airhead. To a great extent, they must rely on the tactical air support (USAF) for antiarmor protection.
7. Airmobile operations also require command of the air in the airhead.
8. Adverse weather restricts airmobile operations more than ground mobile operations.

Airmobile forces are employed in furtherance of a ground combat effort, their use permitting the commander to take advantage of the speed and flexibility of army aircraft in accomplishing a wide variety of tasks. The capability of conducting airmobile operations enables the commander to: pose a constant threat which may cause the enemy to divert combat forces in order to maintain a strong posture in rear areas to protect vital installations and hold key terrain; overcome distances and to bypass barriers and enemy defenses; extend radically the area over which the commander can exert his influence; and deploy his forces more effectively by holding a highly mobile reserve in dispersed areas.

The missions for which airmobile forces are most readily adapted include:

1. Economy of force.
2. Raids.
3. Antiairborne and counter guerrilla operations.
4. Overobstacle assault.
5. Exploitations of nuclear weapons effects.
6. Seizure and retention of key terrain.
7. Blocking or screening of enemy avenues of approach.
8. Feints and demonstrations.
9. Reconnaissance and security.
10. Counterattack of enemy penetrations.
11. Ship-to-shore operations.

In airmobile operations planning, it is normally the next higher headquarters of the unit executing the operation which is responsible for coordination with higher, lower, and adjacent units, of fire support, with air defense units, with Airforce, Navy, and Marine units, with Army aviation FOC and FCC; and of Pathfinder Support.

The command relationship between the airmobile force commander and the supporting army aviation elements is such that the airmobile force commander exercises operational control of the aviation element during the airlift phase. The most efficient means of effecting his control during the air movement phase is by establishment of an airmobile command post.

One of the more important factors in aerial operations is weather. Considering the principal weather hazards, the first is structural icing. On the occasions when this is likely, aerial operations must be ruled out unless the aircraft are equipped with deicing devices for both airfoils and pilot visibility. Even then, reduced loads must be carried, as an accumulation of ice on other surfaces must be expected. Low visibility caused by fog, haze or smoke and low ceilings caused by low clouds often restrict or prohibit the operation of aircraft. Even though aircraft may be flown on instruments over established flight routes during these conditions, tactical operations may be ruled out due to inability to install the electronic navigational aids required. Further, these conditions force flight at higher altitudes, for safe terrain clearance, which will usually entail flight above the enemy radar horizon. Thus, if the enemy possesses a sophisticated air defense system, this alone may make the operation impractical, even though the installation of necessary navigational aids is practicable. It should be remembered, however, that these conditions are much less restrictive of rotary than fixed-wing operations. The actual safe limitation depends upon the experience and state of training of the pilots of the airlift units. The decision of the airlift unit commander should therefore be accepted as final with regard to the technical safety limitations in such cases. Actually, a marginal ceiling and visibility which still permits safe flight, may be a most favorable condition for an airmobile operation. The low visibility will reduce exposure to the fires of enemy line of sight weapons, and the low ceiling will eliminate the possibility of attack by enemy high performance type aircraft. The other weather factors are turbulence and high winds. Although less restrictive, they are important considerations. High turbulence may render flight at low level hazardous and result in extreme airsickness on the part of a large portion of the troops being lifted. High winds can greatly reduce the ground speed during either or both approach and return, thus requiring more time and fuel, and increasing exposure to enemy air defense fires.

Certain planning factors must be considered in mounting an airmobile operation. In general, they are the same as are considered in all operations. However, their application with reference to the employment of airlift includes some elements which might not otherwise be considered.

As in any operation, the mission is paramount and it is the first thing that is considered. The mission should be studied to determine if it can be accomplished more expeditiously by the use of airmobility as opposed to other forms of mobility. The existence of barriers or obstacles and the distance to the objective may indicate that other means of movement do not provide as good assurance of success as airmobility. Air mobility may be the only manner by which an objective may be attained due to time limitations. Time limitations imposed by higher headquarters or because of probable enemy action, as in the case of seizing a key objective before it is seized or destroyed by the enemy. Army airlift should not be used when the mission can be accomplished equally well with other means of mobility. When employed, it is normally in support of the main attack.

The weather and terrain in the proposed area of operation must be studied to determine their influence on the use of aviation.

The scheme of maneuver and the fire plan of higher, lower, and adjacent units are considered to determine if they will hinder or assist the proposed airmobile assault. Our plan of maneuver must provide for withdrawal of or ground link-up with the airmobile force in order to prevent its defeat in detail by enemy action.

Our fire capability and fire plan must provide adequate firepower both in the objective area and along proposed flight routes. Firepower for the objective area and suppressive fires along flight routes may be provided by the airmobile force itself. If, however, airlift is insufficient to carry in the required fire support means, our dispositions must be such that the airmobile force can be supported from presently occupied artillery positions or by close air support. Firepower must be adequate to neutralize possible enemy air defense capabilities along flight routes to and from the objective area.

The logistical support required for the operation must also be considered. Classes IIIA and V for armed aircraft will require careful planning. The lifted unit should be provided with as much of its required logistical support in the initial lift as possible. Additional resupply may be required in emergencies or for longer duration operations.

The enemy situation and capabilities have a vital effect on both the airmovement and ground phase of the operation. The relative combat power of any enemy force in the objective area must be studied to determine if the size force to be airlifted can reasonably be expected to achieve success. The location and movement times of possible enemy reinforcements or reserves are considered to determine if the force can expect to exist until link-up or withdrawal. Forces in contact are studied to determine if the enemy positions can be breached by ground attacking forces to insure link-up. The enemy nuclear capability, firepower capability, and air defense capability must be considered.

The status, strength, training, and composition of our own forces is considered to determine whether or not the use of an airmobile force is feasible.

As a basis for our discussion today, we will use a hypothetical situation in a general war environment with a setting in Belgium. The situation as pertains to air, air defense, and nuclear warfare is such that the employment of airmobile forces is feasible.

1st (US) Corps, as part of the 30th (US) Army, resumed the offensive at 210500 Mar employing the 52d and 54th Mech Div in the attack with 25th Armd Div and 21st Inf Div (-) in reserve. The 1st Bde, 21st Inf Div, consisting of 1/66, 1/67, and 1/68 Inf, 1/45 Arty and A/21

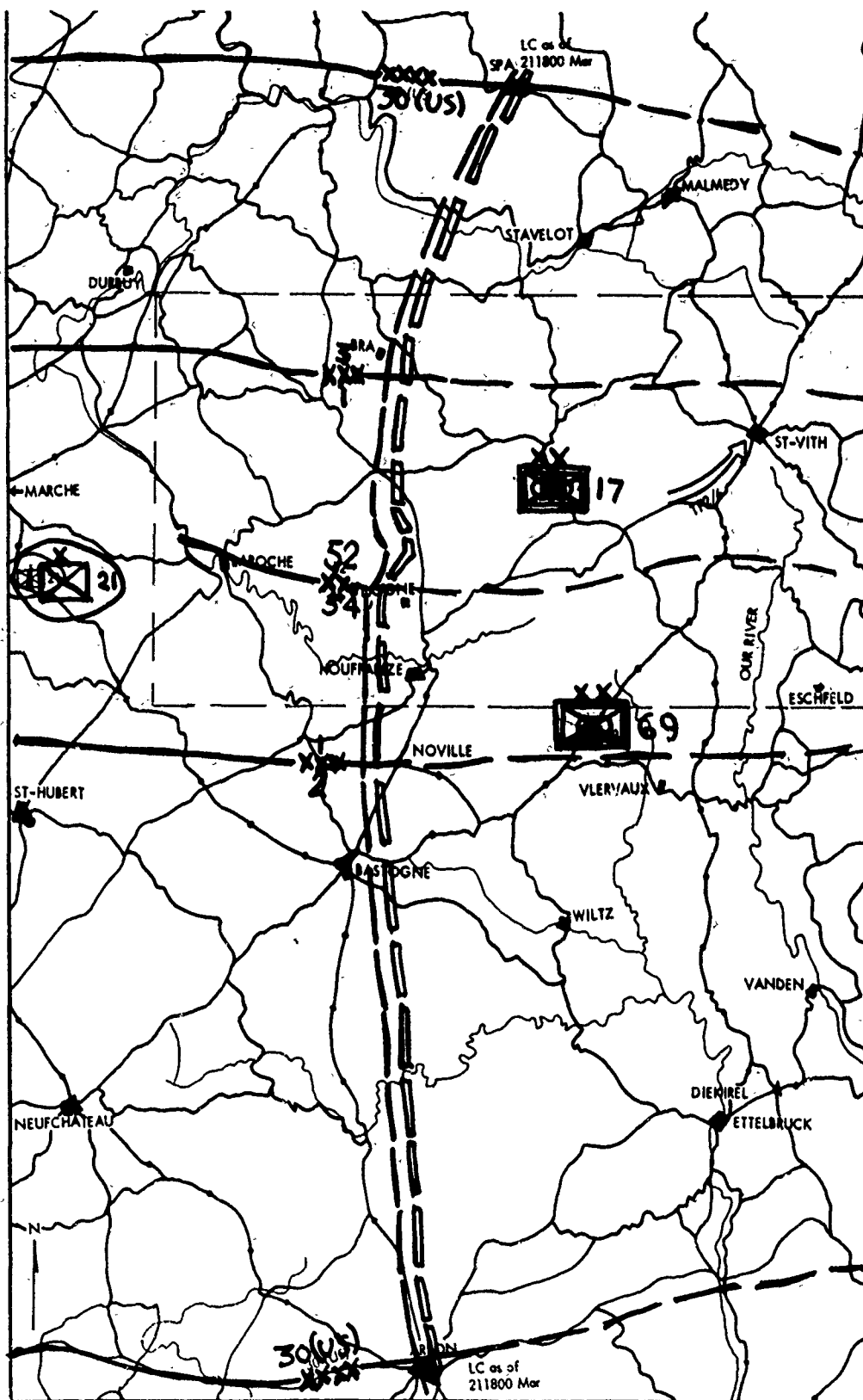
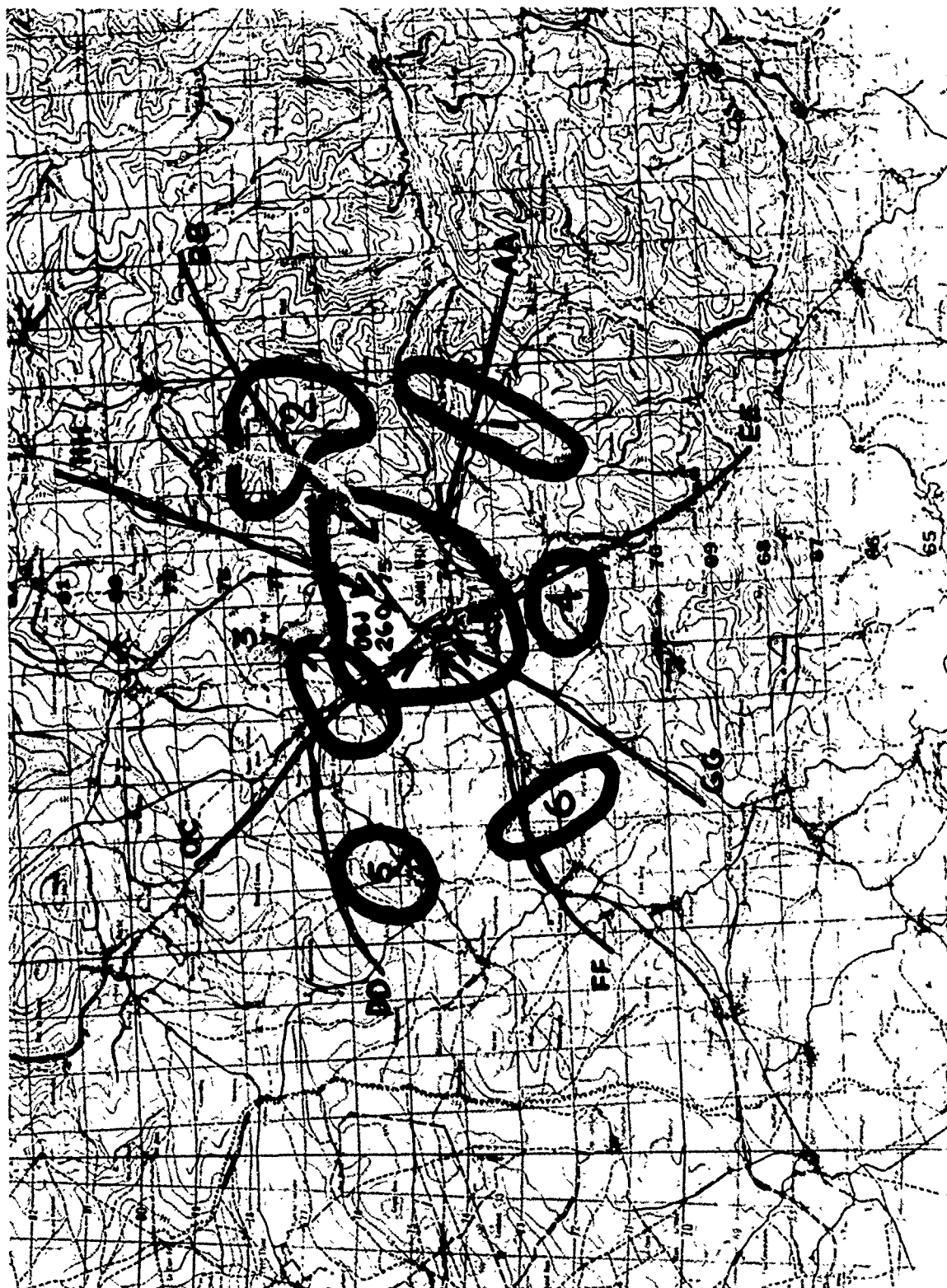


Figure 1. General Situation



Engr, has been detached and placed directly under 1st Corps control with the mission of preparing for airmobile employment.

Subsequent to the initial rupture of enemy forward defenses the attack was slowed and local enemy counterattacks were launched. TF 2/6 from 52d Mech Div was cut off and ordered to continue its attack to seize St Vith (Obj 260) 55 kilometers from assembly area of 1st Bde.

Time is now 211800 Mar. TF 2/6 estimates control of Obj 260 by 1830. CG, 1st Corps, ordered 1st Bde to reinforce TF 2/6 in St Vith at 220530 Mar. Assume command of all forces in St Vith and defend the area until link-up by 52d Mech Div. Estimated time of link-up 222400 Mar. This merely sets a stage for our development of the airmobile plan. We will follow the 1st Bde staff through the planning sequence discussing the ground tactical plan, landing plan, airmovement plan, and the marshaling and loading plan.

To assist the S3 in his development of the ground tactical plan, S2 briefed him on the area of operations to include key terrain and Aggressor avenues of approach into the St Vith area.

CG, 1st Bde, prior to arrival of a liaison officer from TF 2/6, discusses with his staff the following areas he wants coordinated with TF 2/6:

1. Command Relationship. 1st Corps has specified that I will assume command of TF 2/6 in the St Vith area.

2. Command and Staff Liaison. We have already sent a liaison officer to 1st Bde, 52d Mech Div. Just as soon as our plans have been formulated, I want a liaison officer dispatched to TF 2/6. At that time we will probably be able to relieve the LO with 1st Bde, 52d Mech Div.

3. A System of Mutual Recognition. A system of mutual recognition will be less involved than when effecting a ground link-up. In this operation, we will actually be conducting an aerial link-up and will be moving vertically into a secured area. As such, we must insure that TF 2/6 (stationary force) knows the time our force will begin arriving and our direction(s) of approach.

4. Communication Plans. A compatible system of communications will be developed prior to arrival of the airmobile force in the objective area. I want communications established with TF 2/6 as soon as possible; therefore this system should encompass our present location, air movement, and ground operations. Security must be considered for all phases of the communications plan.

5. Schemes of Maneuver. Our mission, in essence, is to reinforce TF 2/6 and defend St Vith objective area until ground linkup. Once we are briefed as to the current disposition of TF 2/6, we will develop our ground tactical plan incorporating TF 2/6 to include the attack to secure terrain out to the airhead line and defense of the airhead.

6. Coordination of Fires. Fire support during the airmovement will be provided by artillery units behind the line of contact and aircraft flying column cover. I do not want TF 2/6 providing any support other than for its own operations. This will conserve ammunition and assist coordination of fires during our landing operation. Upon landing, I plan to attach whatever artillery TF 2/6 has to our artillery battalion.

7. Assistance from TF 2/6. Since we are moving into a secured area, TF 2/6 can provide valuable assistance. Obstacles to landing will be removed, guides will be provided to assist in control, and Pathfinder detachments will precede our main body. Additionally, TF 2/6 will keep us informed of the current situation in the objective area. TF 2/6 representative may have other suggestions as to assistance available.

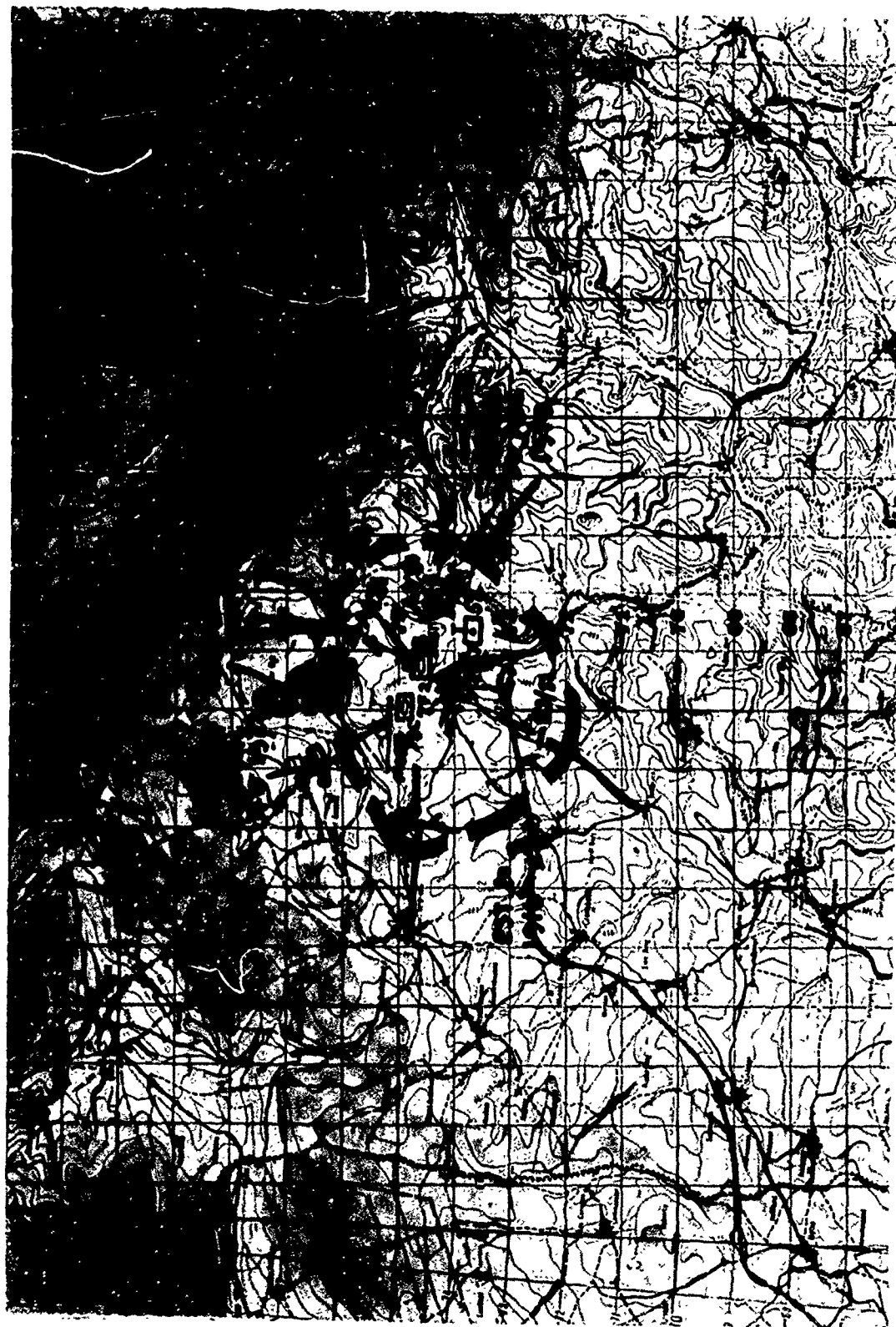


Figure 3. Current Dispositions, TF 2/6

TASK ORGANIZATION: TF 2/6

Tm A 2/6 Armor
A 2/6
1 B 2/81

C 2/6 (-1 Plat)

Tm B 2/81 Mech
B 2/81 (-1 Plat)
1 C 2/6

Tm B 2/6 Armor
B 2/6 (-1 Plat)
1 A 2/81

Tm A 2/81 Mech
A 2/81 (-1 Plat)
1 B 2/6

TF Control
A 7/52 Arty
A/C Plat
AT Plat
Mort/DC Plat
1 C/52 Engr

Figure 4. Task Organization: TF 2/6

8. Alternate Plans. Available planning time will not allow for any extensive alternate plans. However, our plan will be developed for an airmobile assault thus allowing us to adjust to the actual friendly and enemy situation upon landing. I want sufficient flexibility incorporated in your air movement plan to allow for late changes on routes.

The arrival of the XO, TF 2/6, at the 1st Bde CP, provided information on the current dispositions of TF 2/6 (Figure 3) and the task organization of the force. (Figure 4) XO, TF 2/6, in his briefing, stated that TF 2/6 can conduct limited objective attacks prior to arrival of the airmobile force to provide more landing area.

Based on this information, CG, 1st Bde decided that he will have the brigade move in two lifts:

1st Lift

Bde Hq
1/66 Inf
1/67 Inf
1/45 Arty
A/21 Engr

2d Lift

1/68 Inf
Follow-up supplies

Before continuing with the plan, let us take a look at the sources of airlift aviation within the field army. Recognize that the airmobile battalions shown at Corps and Army are merely proposed organizations and are being used at the Infantry School for instructional purposes. (Figure 5)

Back to our problem.

In preparing the ground tactical plan, S3, 1st Bde considers the most effective method of incorporating TF 2/6 into the plan. Desirably a method compatible to both the assault and defense phases will cause the minimum amount of adjustment during the transition from assault to defense. S3 considers two courses of action:

1. 1/66 and 1/67 land, attack through elements of TF 2/6 to seize assigned objectives and secure airhead line in zone. Upon passage of lines, TF 2/6 revert to brigade reserve. 1/68 Inf assume responsibility for portion of airhead after arrival of 2d lift.

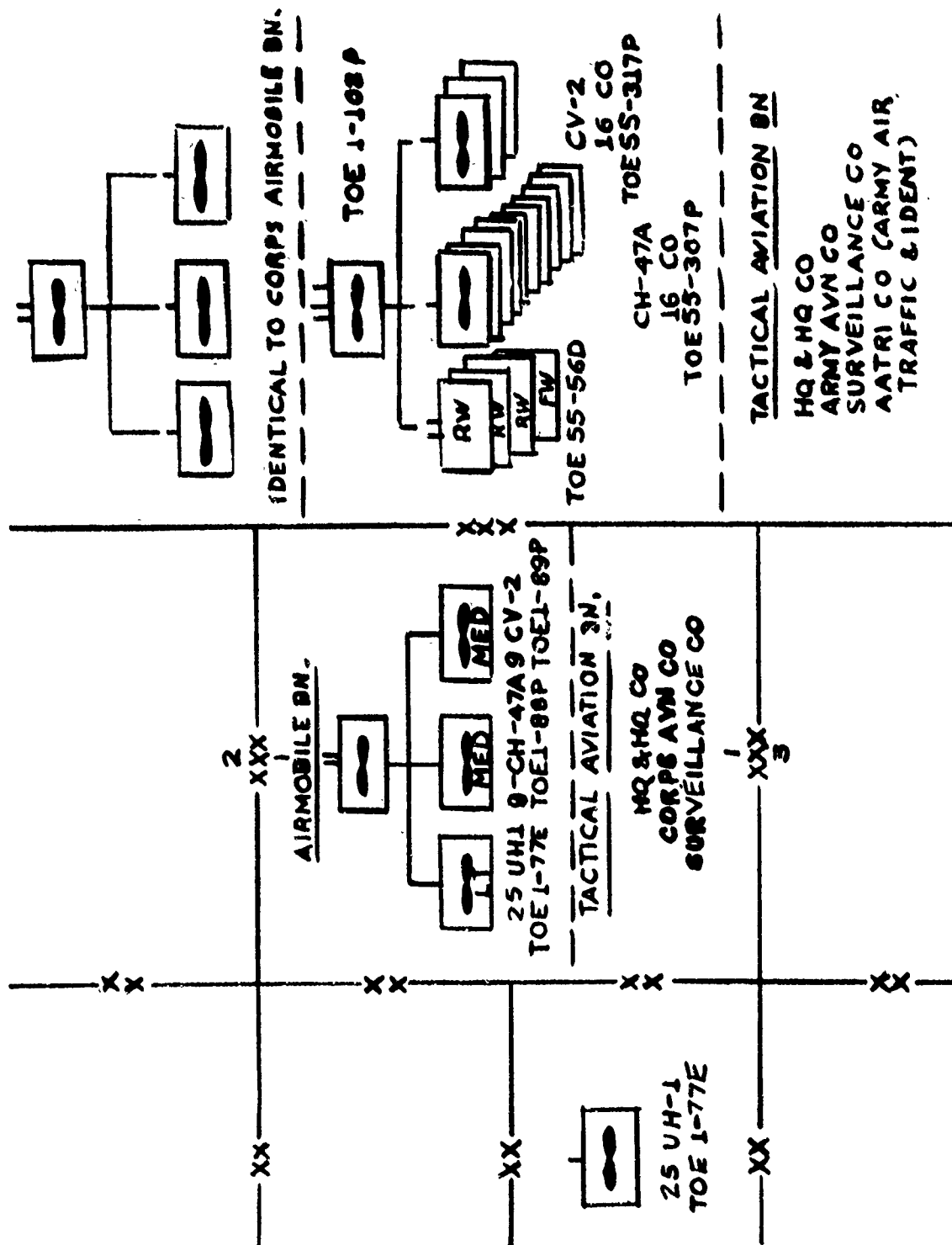


Figure 5. Source of Army Airlift Aviation

2. 1/66 and 1/67 land, attack through elements of TF 2/6 to seize assigned objectives, and secure airhead line in zone. During passage of lines, TF 2/6 elements are attached to 1/66 and 1/67 in zone. TF 2/6 (-) attack to seize assigned objectives and secure airhead line in zone. 1/68 Inf is brigade reserve upon landing.

In comparing the two courses of action, S3 recognizes that in selecting C/A1, the brigade will not have the capability of controlling the terrain necessary to accomplish its mission. After arrival of 1/68 Inf, brigade must resume the attack to expand the airhead. This C/A does offer the advantage of a strong, armor-heavy, mobile reserve. C/A2 will put all of the tanks on the perimeter and will require brigade to put a temporary string on the reserves of all three battalion TF's until arrival of 1/68 Inf. The brigade will, however, be able to expand Obj 260 to the desired airhead line without having to renew the attack. S3 bases his ground tactical plan on C/A2.

OPORD 27

*	*	*	*	*
TASK ORG: 1st Bde, 21st Inf Div				
TF 1/66		TF 1/67		
1/66 Inf		1/67 Inf		
TmA2/6 (Upon Landing)		TmB2/6 (Upon Landing)		
TF 2/6 (Upon Landing)		Bde Control		
2/6 Armor (-2 Co)		1/45 Arty		
A2/81 Mech		A7/52 Arty (Upon Landing)		
B2/81 Mech		A/21 Engr		
1/68 Inf		1C/52 Engr (Upon Landing)		
*	*	*	*	*

3. EXECUTION

- a. Concept of Operation: 1st Bde conducts airmobile assault to link up with TF 2/6; seize Obj 1, 2, 3, 4, 5 and 6; clears airhead and defends until linkup with 52d Mech Div; assist passage of 52d Mech Div; release elements of 52d Mech Div and revert to Corps reserve on order. 1/68 Inf is Bde reserve; TF reserves will be committed on approval of Bde. Priority of fires initially to TF 1/66. Fires will be planned. Bde allocation: 10 ALFA .5 KT DC. No sub-allocation at this time.
- b. TF 1/66:
- c. TF 1/67:
- d. 1/68 Inf: Be prepared for airlift into airhead on order.
- e. TF 2/6:
- f. 1/45 Arty GS.
- g. A/21 Engr GS.
- h. Avn Plat: GS.
- i. Coordinating instructions:
 - (1) Each TF provide local security forward of airhead line.
 - (2) Bn submit recommendations for nuclear fires.
 - (3) Report locations, composition and designation of TF reserves.
 - (4) Annex C - Landing Plan. (Not issued)
 - (5) Annex D - Air Movement Plan. (Not issued)
 - (6) Annex E - Link Up Plan. (Not issued)

Figure 6. Extract of OPORD: 1st Bde

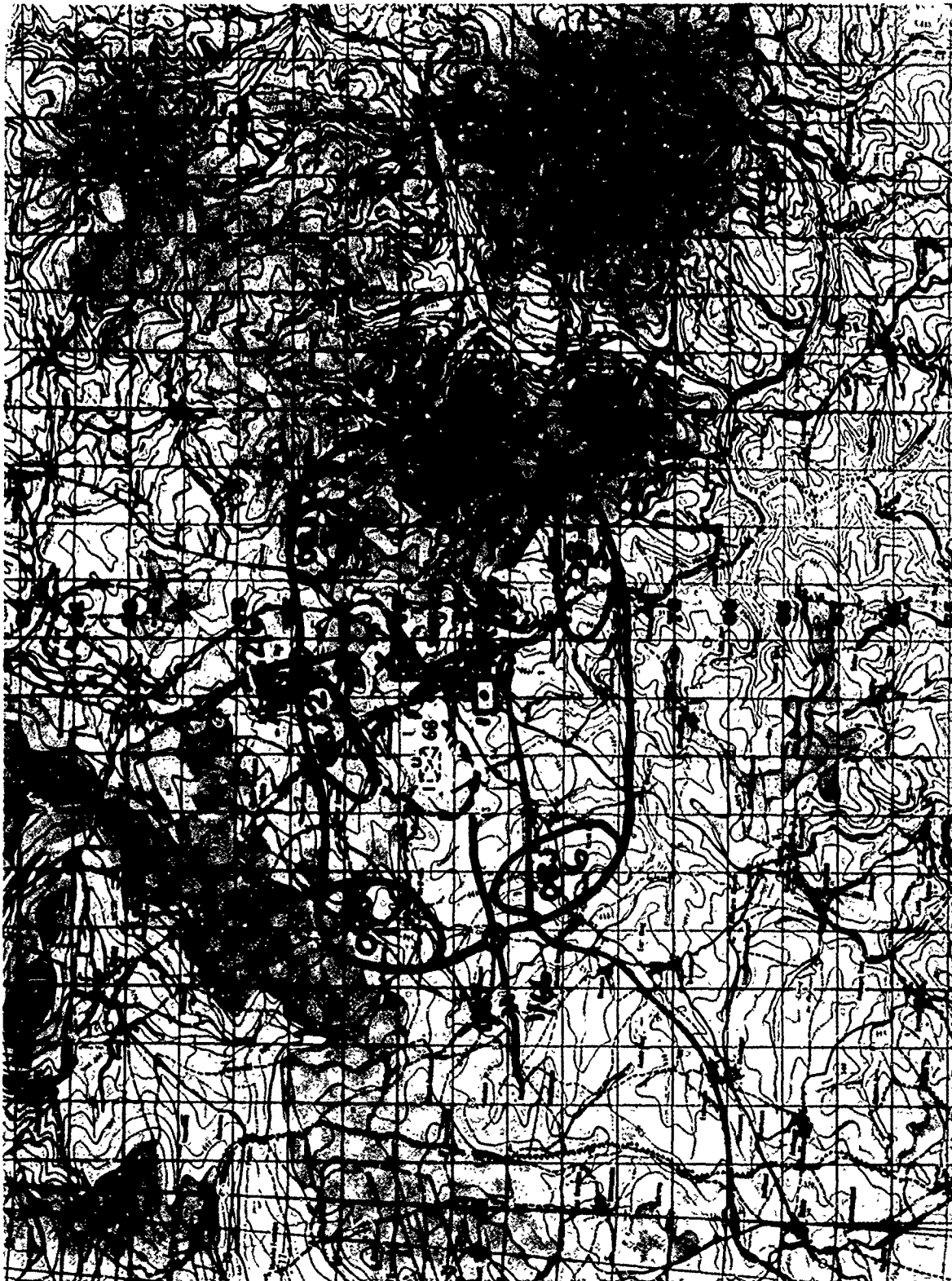


Figure 7. Graphic Plan: 1st Bde

The recommended task organization (Figure 6) and scheme of maneuver (Figure 7) places the bulk of the armor oriented to the west and southwest. At this time the most dangerous known threat is from the west and southwest. If a threat develops from the east, the tank companies attached to 1/66 and 1/67 can be readily shifted to meet the threat. Normally, one of the salient characteristics of an airmobile operation is the lack of armor; in this situation, the airmobile force has incorporated three tank companies and the mobility of two mechanized infantry companies into its defense. A COPL is not designated because of the extended frontages the battalions will be defending. However, battalions are directed to establish security forward of the airhead line. Bn limits of responsibility are depicted graphically by the forward extension of unit boundaries.

In fire support planning, S3 and FSC will not schedule any fires to be delivered on the objective. They will insure coordination with TF 2/6 to avoid any friendly fires which might interfere with the approach flight. On-call fires will be planned to assist in securing the airhead line and to provide defense against counterattack. Suppressive fires will be planned along the approach and return routes. Fires planned within or near the flight corridor(s) will be carefully coordinated with the air movement. Smoke is requested for delivery by artillery and/or aircraft to mark the flight routes, aid in navigation, and screen the air movement. FSC will recommend lucrative nuclear targets beyond DC range to 1st Corps. Fire support coordination will determine any scheduled friendly nuclear strikes that may support or interfere with the operation and necessary adjustments will be made. Plans are made for effective use of air support allocated for column cover and support in the airhead to provide protection against enemy aircraft. Air strikes are planned against known enemy targets along the flight route as well as away from the objective area to aid deception and disrupt known or suspected enemy reserves. In addition to the flight corridor(s), additional measures are taken to coordinate supporting fires. These include: the fire coordination line (FCL) between the airmobile and link-up forces; a no-fire line (NFL) to control corps and army artillery fires; and a FSCL to control tactical air support.

This by no means represents the completed tactical plan. We have not discussed plans for the ground link-up, the overall communications plan, or any alternate plans. Actually, as regards alternate plans, by planning an airmobile assault for this reinforcing mission, 1st Bde will be prepared to enter the objective area in a fighting posture should the enemy situation change.

S2 and the Aviation Liaison Officer have furnished S3 an overlay showing suitable landing zones within and adjacent to the objective area. (Figure 8) The capacity of each landing zone tells the S3 how many helicopters can be on the ground on a particular landing zone at one time. (Figure 9) With this as a guide, S3 will not schedule aircraft of a single lift in excess of landing zone capacities.

A tentative allocation of aircraft has been made by S3 in coordination with the Aviation Liaison Officer as follows:

Bde Hq & A/21 Engr	- 15 Utility;	14 Cargo
1/45 Arty	-	; 25 Cargo
1/66 Inf	- 30	; 18
1/67 Inf	- 30	; 18
1/68 Inf	- 30	; 18 (2d lift)

This allocation was based on the following:

- 1st Corps Airmobile Bn (+)
 - 3 Utility Co (75 UH-1D Acft)
 - 3 Cargo Co (27 CH-47B Acft)
- 405th Trans Bn (Trans Acft)
 - 3 Cargo Co (48 CH - 47B Acft)
- Announced ACL: UH-1D - 3000 #/11 Seats
- CH-47B - 8000 #/33 Seats



Figure 8. Available Landing Zones

LANDING ZONE	CAPACITY (CH)	LANDING ZONE	CAPACITY (CH)
E	10	Y	20
F	15	Z	30
G	10	AA	10
H	20	BB	40
I	15	CC	15
J	15	DD	10
K	10	EE	10
L	30	FF	15
M	15	GG	40
N	15		
O	20		
P	25		
Q	15		
R	10		
S	10		
T	20		
U	15		
V	20		
W	15		
X	15		

Figure 9. Landing Zone Capacities

The landing plan for an airmobile operation will normally include the sequence, time, and place of arrival of troops and materiel in the airhead and the control measures to be used. In this situation, the times and specific place of arrival will be incorporated into the Bde landing plan after the Bn landing plans are prepared. (Figures 10 & 11)



Figure 10. Selected LZs.

UNIT	UH	NO HEL CH	LANDING ZONES	REMARKS
BDE HQ & ENGR CO (-)	15	8	E, F, G	Comd Gp - LZF
1/45 Arty	0	25	J, K	15 J - 10 K
1/66 Inf + 1A/21 Engr	30	21	M, N, O, P, T	Bn Landing Plan
1/67 Inf + 2A/21 Engr	30	21	H, I, Z, AA, BB	Bn Landing Plan
1/68 Inf	30	23	TBA	

Figure 11. Allocation of LZ's

The information provided the S3 concerning suitable landing zones was developed by the S2 and Aviation LO based on a detailed analysis of the terrain and the technical capabilities of the aircraft being used. At the time this information is compiled, the S3 may or may not have completed his ground tactical plan. When the ground tactical plan is completed, a landing plan will be developed to support it utilizing the number of available landing zones deemed necessary. At brigade-level, the planner can take one of three approaches in preparing the landing plan:

1. Assign landing zones down to the rifle companies in coordination with Bn S3s.
2. Allocate sufficient landing zones to the battalions to accommodate the force and allow them to develop their own landing plans.
3. Allocate all available landing zones within or adjacent to battalions of the brigade for development of their own landing plans.

The third method is the most ideal since it allows the battalion maximum latitude in planning. However, in this situation, S3 used the second method since the additional control was deemed necessary to better coordinate the support of TF 2/6.

A consideration in selection of available landing zones is the capability of the friendly force in the area to secure them and the Pathfinder detachments to control them. With that in mind, S3 selected all but one of the landing zones within the area of TF 2/6. TF 2/6 has been directed to conduct limited objective attacks to secure the LZs beyond the perimeter. Effective terminal guidance by trained personnel will require the utilization of all four 15-man Pathfinder detachments from 30th Army. Each detachment, when augmented by the tactical unit, has the capability of operating 8 landing sites with a capacity of 8 helicopters per site or a total of 64 helicopters per detachment. This is in addition to establishing the release points (RP).

Plans are made for the introduction of the Pathfinder detachments prior to the operation since the number of aircraft involved will require an efficient system of terminal guidance. Re-supply helicopters will be operating between the line of contact and St. Vith so the Pathfinder detachments can be infiltrated into the area without compromising the operation. The consideration of guide personnel visualizes sufficient personnel from TF 2/6 to quickly orient key personnel as they arrive and organize their attack. Guides from the howitzer battery knowing generally where 1/45 Arty is going into position will be capable of assisting the battalion in more rapid occupation of position. The planner for an operation such as this must plan to take full advantage of the friendly forces in the objective area to assist his operation. At the same time plans cannot be made so dependent upon these friendly forces that any preoccupation of the friendly force will result in failure.

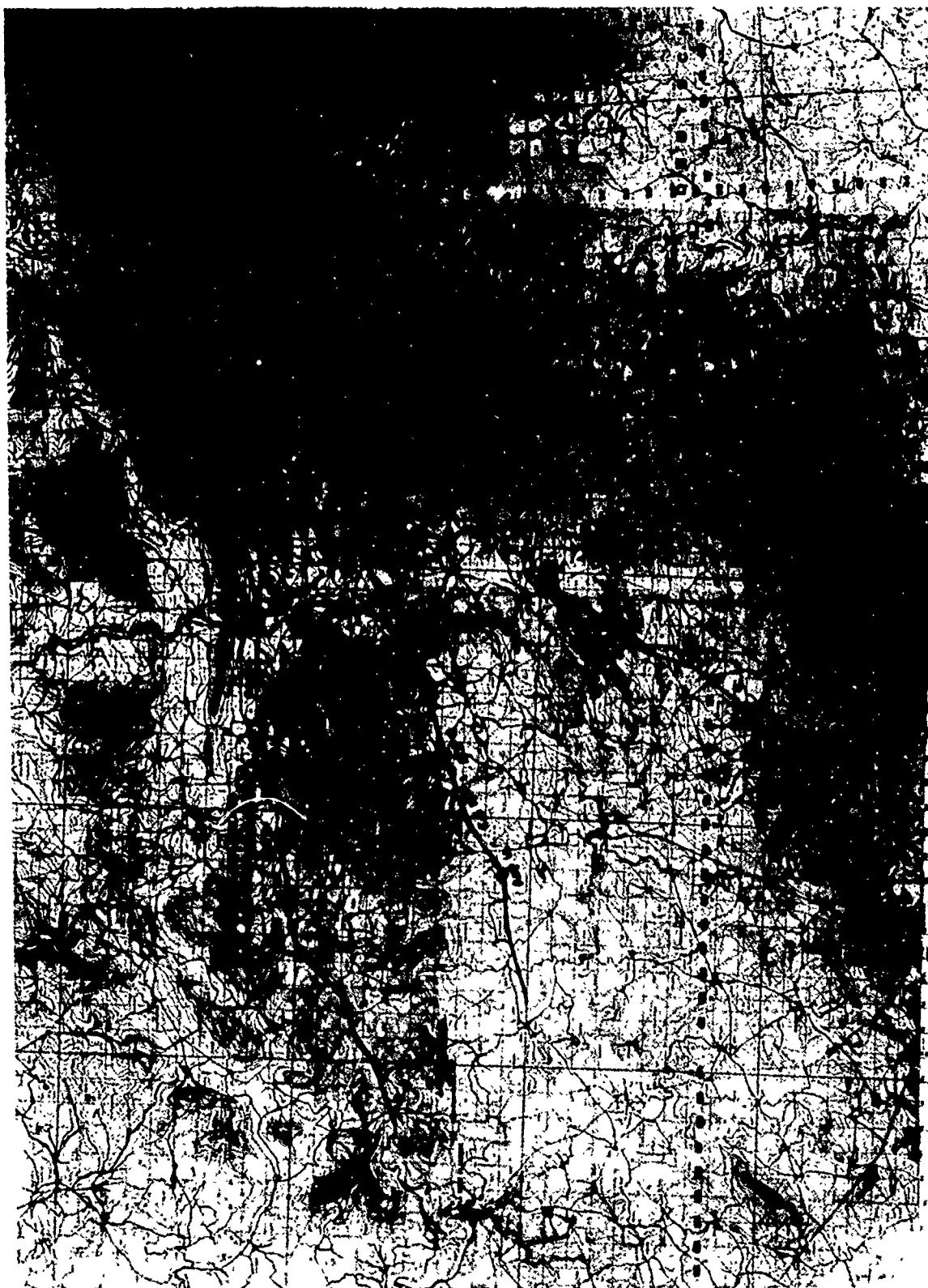


Figure 12. Flight Route Diagram

The desired sequence of arrival is peculiar to this situation wherein the brigade is reinforcing a stationary force. Normally the desire is to get the maximum assault force on the ground first followed by the fire support and command echelon. Here it is essential that the command group arrive early in the main body to establish overall command and control. The artillery battalion, by being sequenced in early, will be in position and prepared to support the ground attack.

As the planning continues, the S3, Asst S3, and Aviation Unit Liaison officers are preparing the air movement plan.

The flight route diagram is published in overlay form as part of or an annex to the operation plan/order. (Figure 12). It includes the location of loading areas (not shown here) flight routes, initial points, air control points (ACP), release points, and landing zones (normally the last ACP before the RP is also the communications check point (CCP)). Alternate and crossover routes may be included on the same or a separate overlay. In order to minimize ground movement prior to an airmobile operation, dispersed loading areas are selected as close as possible to the assembly areas of the units to be airlifted. Flight routes are selected to avoid enemy strengths, to provide deception, and to take advantage of terrain. Flight Route Orange passes within 1000 meters of a 14.5 AA position (ACP 4), which is well within the range capabilities. Even though terrain and the wooded area will partially mask the fires, successful passage of this point will be dependent upon destruction or suppression of this position. Continuing along Route Orange, the planners moved over the high ground since, at this time, there is no known enemy in the area and navigation and control will be simplified thus providing a more organized approach into the airhead. The use of multiple routes is desirable in this operation to reduce the time length of the air column and density of aircraft on any one route. At the same time, the planner must recognize that the use of multiple routes will increase the problem of control and place greater restriction on friendly ground fires. Release points are normally so located that the pilot can visually pick up his landing zone and begin his approach. Additionally, it is desirable to have electronic devices in the area to provide more accurate terminal guidance.

Flight corridors need not be shown on the flight route diagram. During the pilot briefing, pilots will be appraised of how much latitude they have to the right and left of the designated flight route for evasive flying without leaving the controlled area.

Alternate routes, as alternate plans, are a must. To be of any value, these routes must be planned and so coordinated that a last minute change, to include in-flight crossover to an alternate route, will not jeopardize the mission. Since this operation is corps directed and corps FOC will effect coordination, the boundary between 52d and 54th Mech Divisions does not limit the planner. If any of the planning considerations make it necessary or desirable to route the air column over the adjacent corps, coordination will be more complicated but not impossible.

The S3 and Avn LO considered two flight formations when developing the movement plan: VEEs in trail, and VEE of VEEs. VEEs in trail will impose a longer restriction on friendly ground fires over a given point by virtue of the greater time length of each serial. Though the flight corridor for VEEs in trail will be slightly narrower than for VEE of VEE, it will not allow for an appreciable advantage in way of less restriction of ground fires. The determining factors in this situation for selecting the VEEs in trail formation were:

1. The use of multiple flight routes will compensate for the greater time length of each serial by putting approximately one-half the helicopters over each route.
2. The trail formation allows more maneuverability (evasive flying) during movement.
3. VEEs in trail will provide a more manageable formation for the Pathfinders in directing aircraft from CCP to landing sites.

[illegible]

Figure 13. Air Movement Table

The aircraft normally fly at the lowest altitude above the terrain within technical safety requirements. Low altitude reduces the enemy's capability to detect the movement and to place long range, large caliber weapons fire on the aircraft in flight. By flying low, aircraft take maximum advantage of irregularities in the terrain (contour flight), thus gaining some protection from small arms fire.

The prescribed speed to be flown depends on the type of aircraft, the formation, and the use of externally slung loads. The aircraft normally fly at the rated cruising speed except that when two or more types of aircraft are flying in the same serial, they fly at the cruising speed of the slowest aircraft. There are two types of aircraft being employed in this operation: UH-1D (cruising speed 100 knots), and CH-47B (cruising speed 130 knots). By careful serial composition, serials could be organized with only one type aircraft in each serial thus taking advantage of the greater speed of the CH-47B. This however would be at the expense of tactical integrity and is not acceptable.

The air movement table (Figure 13) includes the serial organization, designation of loading zones for each serial, and time schedule. The serial sequence is based on the commander's priorities for arrival of units in the airhead. The serial organization is based on the tactical plan of the airmobile unit. Transport aircraft unit integrity within serials is desirable; however, it is sacrificed to maintain the integrity of the units being lifted and to comply with the priorities and tactical plan established by the airmobile force commander. This table may be published as part of the coordinating instructions in the operation order or as annex to the operation order. At brigade level, when the initial plan is developed, the preparation of the air movement table may be deferred until additional information is furnished by subordinate units, or published in general form to disseminate necessary planning information to subordinate units.

Movement control information includes the designation and location of the flight control elements, emergency procedures, and communication and navigation information. For small scale operations, navigation may be merely by pilotage and the use of terrain features for air control points. For more complex operations, manned ACPs with electronic navigation facilities and terminal guidance and control in the landing areas may be required.

Concurrent with the tactical planning for this operation, other staff members have been preparing their respective plans to support the operation. Continual coordination is effected among the staff sections to insure that the administrative and tactical plans are compatible and based on the best available intelligence.

During the period from receipt of mission and until station time, 1st Bde has been in the marshalling phase of the operation.

A unit in preparing to mount a joint airborne operation will, prior to the operation, be sealed in a marshalling area for final preparations. A unit conducting an airmobile operation is going to have similar requirements for final preparations. In consonance with the speed and lesser degree of preparation necessary to conduct an airmobile operation, the marshalling plan as such may consist only of designating assembly areas and loading areas. In this situation, the brigade, as the corps airmobile reserve, has been preparing for various airmobile missions. The commander and staff accomplish as much of the detail as possible during this period so as to reduce to a minimum the reaction time upon receipt of a mission. CG, 1st Bde, has been given a requirement to prepare for and execute the mission of reinforcing TF 2/6 with approximately an eleven-hour lead time. During this short period, the CG and his staff will be involved in the following activities:

1. S1. In general, he will be concerned with each of the seven personnel functions. However, additional detailed planning will be required in many instances. The brigade S1 will act

as coordinator between the subordinate unit personnel staff officers and higher headquarters. He will monitor battalion S1 activities and provide assistance or guidance where necessary. From the personnel point of view, the activities of the brigade in a marshalling area preparing to conduct an airmobile operation are not unlike any reserve brigade in an assembly area preparing for commitment to combat. Unit strengths will be checked, provisions for receipt of replacements arriving up to time of departure and recommendations as to disposition of replacements. SOPs will be reviewed with particular attention on the handling of POW and Graves Registration procedures as will apply to this operation, and any changes from SOP will be promptly disseminated.

2. S2. The S2 will procure maps, terrain models, aerial photos, other aids, and detailed information on the weather, terrain, and enemy in the area of operations to permit a thorough briefing of all personnel. He will insure that briefing facilities are physically secure. Tighter security of the area will be effected and counterintelligence effort increased to preclude compromise of the operation. Continued terrain analysis will be concentrated on the selected landing zones, ACPs, and other dominant landmarks along the flight routes as well as in the airhead. Until communications are established with TF 2/6, S2 will direct his requests for information through higher headquarters and/or directly to 1/52d Mech Bde.

3. S3 will be primarily involved in planning for movement to and operation in the objective area. He must also:

a. Maintain close and continued liaison with the aviation unit to insure that any changes in lift support are compatible with his plans as well as insuring any changes in his plans can be supported by the aviation unit.

b. Plan conduct of refresher training in airmobile operations for all troops within the limited time frame.

c. Insure specialized training is provided loading teams as required.

d. If time allowed, he would plan and conduct rehearsals. This will not be practical in this situation.

e. Coordinate plans of subordinate units.

f. Prepare a briefing schedule.

4. S4. The S4 will have over-all staff responsibility for marshalling plans and activities. He will:

a. Schedule and supervise a program of inspections within the limited time frame to determine the status of individual and unit equipment.

b. In conjunction with subordinate unit S4s, determine supply requirements for the operation and insure that arrangements are made for procuring, storing, and issuing to troops prior to take-off. Detailed plans will be prepared and coordination effected for scheduled and on-call resupply in the airhead.

c. Arrange to procure, issue and turn back the required slings and nets for external loads.

d. Detailed plans for locating and loading aircraft with supplies and equipment will be prepared and coordinated with the aviation unit, and disseminated.

e. Establish a loading control group (LCG) and, as S4, will be the officer-in-charge. Although S4 has overall staff responsibility, the attached battalion S4s will also establish an LCG for each battalion. The LCG in each case is responsible to organize and operate the loading area. In cooperation with the movement control center (MCC), the Bde LCG insures that adequate landing areas are available and marked, troops and equipment are prepared as individual loads per each aircraft and are loaded in accordance with the air loading table. (The MCC is operated by the aviation unit and coordinates the arrival from aircraft ready area and departure of all aircraft.)

f. Plan for disposition of Bde Trains subsequent to departure of the airmobile element.

5. CG, 1st Bde will make the best use of the available time by delegating many of the necessary administrative and supervisory tasks to the XO. Both the CG and XO will be kept current on the status of activities by the staff and each other to insure details are not overlooked and that contradictory instructions are not being disseminated. CG considered, in the course of his planning, infiltrating his XO into the objective area during the night. This however, will not be done since the short preparation time makes it more feasible to utilize the XO in the marshalling area. The exchange of LOs and priority sequencing of the command group into the airhead will allow the CG to establish early command and control.

The loading plan will include:

1. Air Loading Tables.

2. Unit Loading Areas.

3. Loading Control for:

a. Individual aircraft.

b. Loading control group.

With the development of good unit SOPs, the preparation of the loading plan will require only adaptability to the type and number of aircraft, and to the specific mission insuring that the loading plan supports the air movement plan, landing plan, and tactical plan.

During this brief discussion of airmobile operations, you took a look at some of the missions suitable for airmobile forces in line with the salient characteristics and concept of employment for such forces. You were reacquainted with the reverse planning sequence and the areas upon which we place emphasis in our resident instruction.

The continuing advances being made in the field of airmobile operations will place ever-increasing demands on you for a continued high degree of professionalism.

SECTION IV. LOGISTICAL SUPPORT FOR INFANTRY AND MECHANIZED INFANTRY BATTALIONS AND BRIGADES

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Instructor, Brigade and Battalion Operations Department

The advent of ROAD has brought forth some significant changes in combat service support in the Infantry division, the first of these being in the name of the "support." What we have for years called administrative support is now combat service support. This change in terminology provides a more accurate reflection of the support being provided. To the unknowing, the former term, administrative support, too often carried the connotation of personnel procedures and management. Personnel management is a part of this support, but by no means all that is involved. Combat service support includes the provision of support in the fields of personnel management, logistics, and civil affairs. Our interest is in the logistical aspect of combat service support.

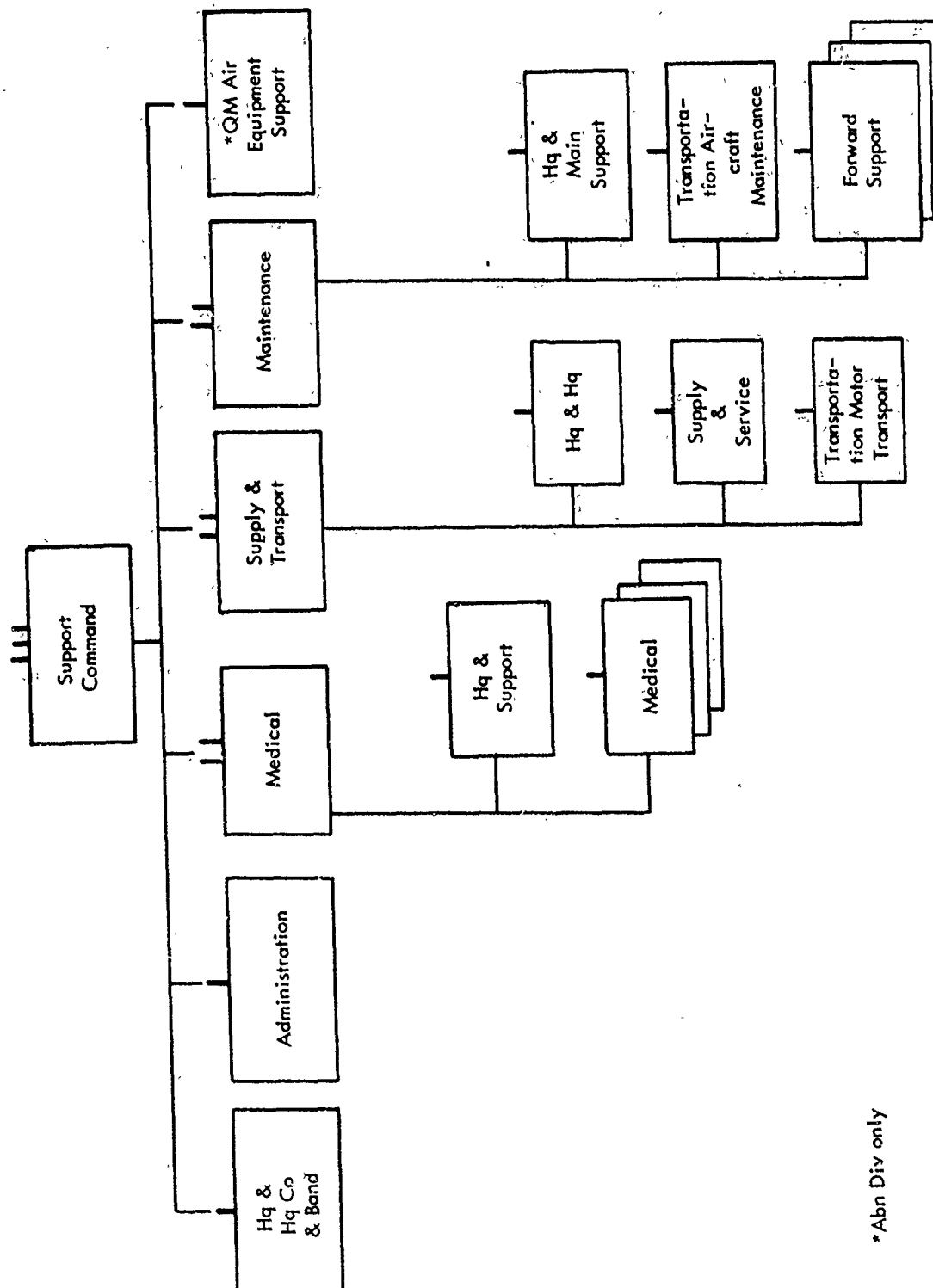
The real change, however, is a result of the combat service support system itself. Logistical support at the division level is functionalized and unified under a single commander, the Support Command Commander. Certain elements of the division support command habitually operate forward in support of the brigades. Supply, medical and maintenance operations are conducted directly between the combat battalions and the division support command, with the brigade performing a monitoring role. The physical location where these operations are performed is the trains, specifically the brigade trains. Trains are established at the company, battalion, and brigade level, and a division support area is established at division level. We shall discuss these installations in detail later.

Requisite to an understanding of the logistical portion of the combat service support system is an understanding or knowledge of the organization of the division support command and the logistical elements in the combat battalion. Before proceeding with a discussion of these organizations, we will briefly look into the origin of the system and the organizations.

The concept of functionalized support unified under a single commander was first tested under the Atomic Field Type Army (AFTA) test program. In this program there was a support command very similar to the support command of the ROAD division. In this same test, the combat battalion was the basic maneuver unit; the intermediate control headquarters for the battalion was the combat command, a tactical headquarters. Accordingly, the combat battalion obtained its logistical support directly from division, as is the case now. Additional testing of the support command concept took place in the pentomic airborne division, though the organization was modified in size and was called a support group. Basically, however, the concept was the same. It proved the workability of functionalized support and one-stop maintenance service. The organization of logistical elements in the combat battalion had as its predecessors the AFTA battalion and the armored rifle battalion. In fact, the organization of the logistical elements in the present Infantry and Mechanized Infantry Battalion is almost identical to that of the ROCAD armored rifle battalion.

Having an idea of the origin of these organizations, we will consider the present division support command.

This organization is part of the division base of each of our type divisions and, with two exceptions, is the same in each of the divisions. The first exception is the Quartermaster Air Equipment Support Company; this unit is organic to the airborne division only. It provides the airborne division with air delivery equipment and performs maintenance on the equipment. The second exception is in the strength of the support command in each of the divisions. Generally speaking, the armored division support command is the largest, the mechanized infantry division, the next largest, the infantry division being somewhat smaller, and the airborne division support command being the smallest of the four.



*Abn Div only

Figure 1. Organization of the Support Command.

The infantry division support command has three battalions and two companies. Within the Headquarters and Headquarters Company and Band, we find the unit staff for the support command commander, the usual company headquarters, the division band, and the division ammunition officer. The administration company, though a part of the support command, is under the general staff supervision of the G1; the support command commander's responsibility for this unit is limited to movement and security.

The Medical Battalion provides division level medical service, second echelon maintenance of medical equipment, and procures and distributes medical supplies. It is organized with a headquarters and support company and three medical companies. Each medical company consists of a company headquarters, a clearing platoon, and an ambulance platoon. Habitually, a medical company is placed in support of each brigade. The Support Company of the headquarters and support company is organized identically to the medical companies, and provides backup support to the forward medical companies as well as providing support for units not supported by a medical company.

The Supply and Transport Battalion is comprised of a Headquarters and Headquarters Company, Supply and Service, and a Transportation Motor Transport Company.

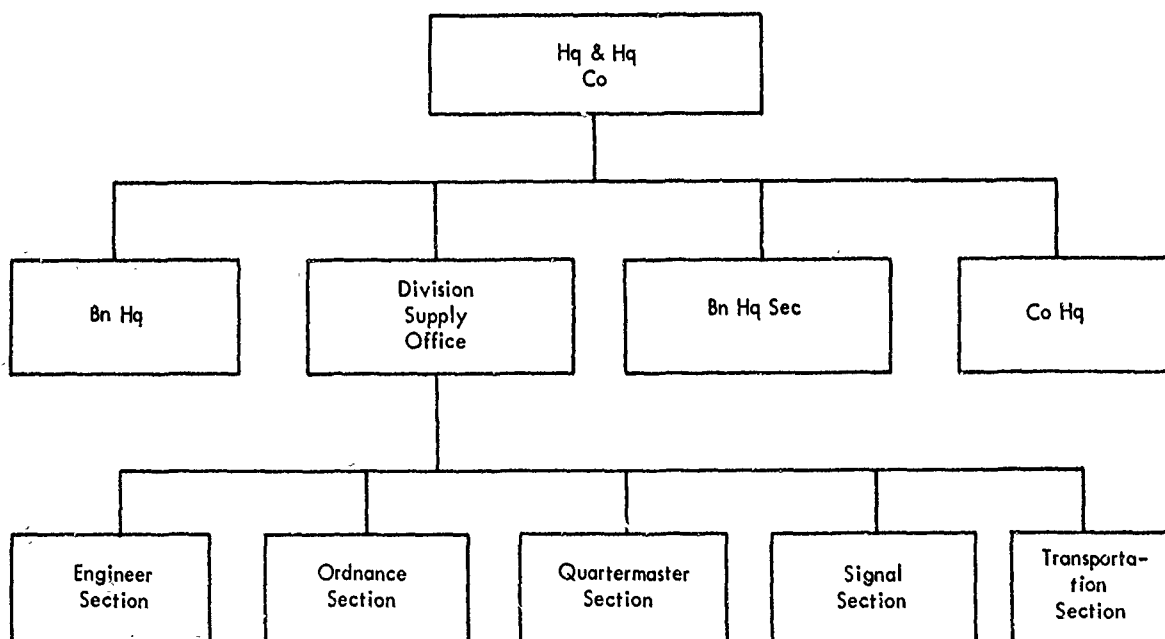


Figure 2. Headquarters and Headquarters Company, Supply and Transport Battalion.

The Headquarters and Headquarters Company provides the battalion commander with a unit staff and a "technical staff." The unit staff is found in the battalion headquarters and the necessary enlisted assistants in the battalion headquarters section. The company headquarters provides personnel to perform the usual company level combat service support. The "technical staff" is found in the division supply office. The Supply and Transport Battalion commander is the division supply officer. His primary assistant for this function is a Major, Quartermaster Corps; it is this officer who actually operates the division supply office on a day-to-day basis. In this office are supply managers, personnel who specialize in engineer, ordnance, quartermaster, and signal supply. Each of these sections processes the requisitions for equipment and supplies of their respective services. The transportation section is

headed by a Captain, Transportation Corps, who is a movements control officer; specifically, he coordinates the activities of the Transportation Motor Transport Company and insures that the transportation required by the Supply and Service Company to effect distribution of supplies is available and is scheduled to meet the requirements. The two technical services not included in the division supply office are medical and chemical. We have already discussed the Medical Battalion and have seen that it is responsible for the provision of medical supplies. In combat we may have a Chemical Combat Support Platoon from a Corps Chemical Combat Support Company attached to the Supply and Transport Battalion. If so, it is this unit that processes requisitions for chemical supplies and procures and distributes them. If this unit is not attached to the battalion, the requisitions are processed in the division supply office as directed by the assistant division supply officer. It is through the division supply office that requisitions flow for all classes of supply, except Class V, repair parts, and electrical accounting machine supplies. We shall return to processing of requisitions for Class V and repair parts later; electrical accounting machine supplies are a function of the Administration Company since it is the unit that has the electrical accounting machines.

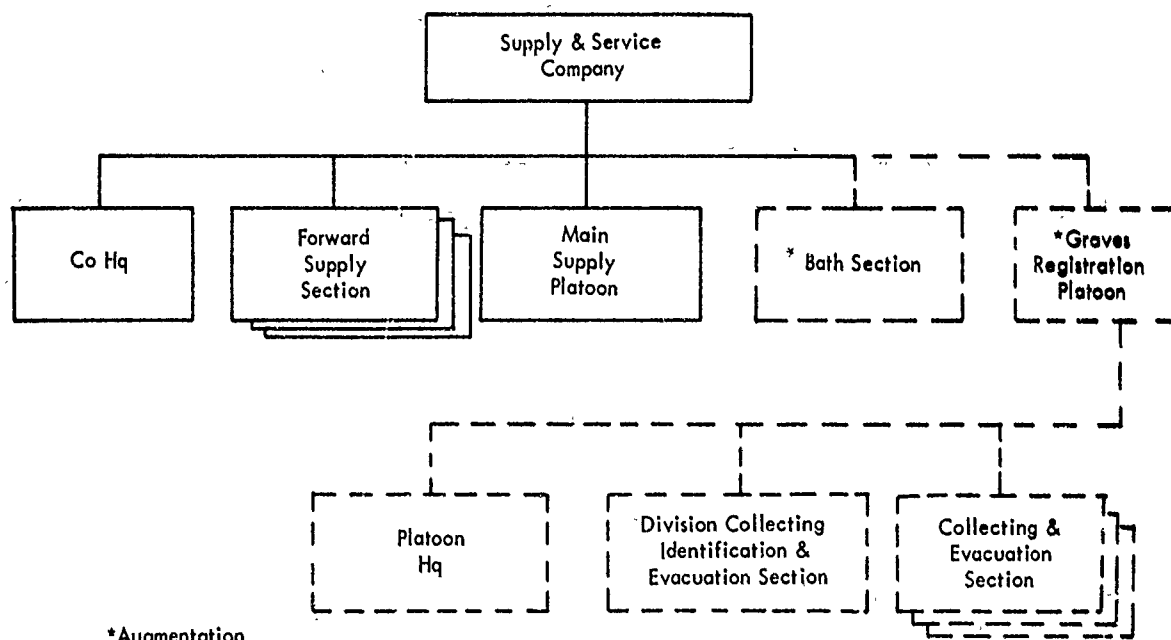


Figure 3. Supply and Service Company, Supply and Transport Battalion.

The Supply and Service Company is the operating agency of the Supply and Transport Battalion. It includes a main supply platoon, which operates division Class I, III, and II & IV distributing points in the division support area; three forward supply sections; and, by augmentation, a bath section and a graves registration platoon (both of these elements are a normal augmentation in combat). The forward supply sections operate Class I and III forward distributing points in each of the brigade trains areas. The Class I distributing point is also capable of processing selected items of Class II & IV supplies. The bath section is capable of establishing nine bath points, each bath point having an eight shower head capacity. Exchange of clothing is no longer accomplished by the bath team; however, arrangements are usually made to have a Quartermaster Direct Support Company from army provide teams at each bath point for the exchange of clothing. The graves registration platoon consists of a division collecting, identification, and evacuation section which is located in the division support area; this is the point to which the dead are evacuated. The platoon also has three

collecting and evacuation sections, one normally operating in each brigade trains area. Units are responsible to evacuate their dead to the collecting point in the brigade trains area and from there they are evacuated by the section to the division support area.

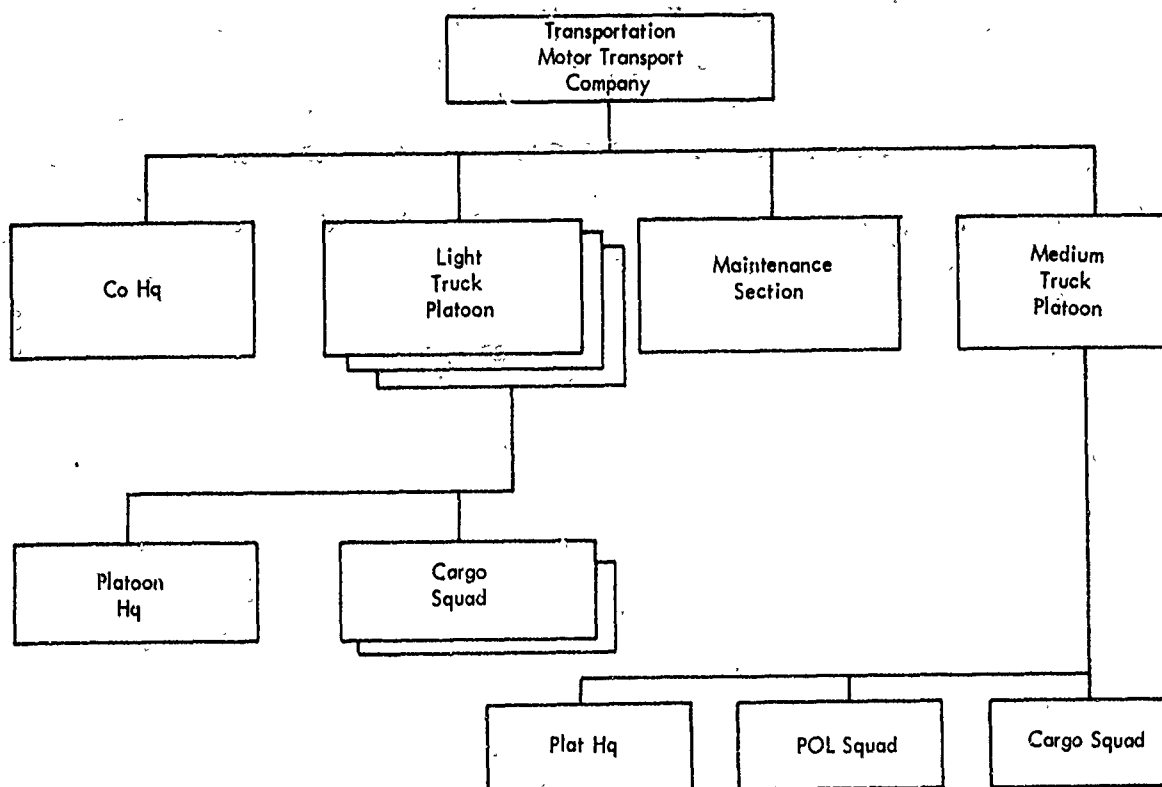


Figure 4. Transportation Motor Transport Company, Supply and Transport Battalion.

The Transportation Motor Transport Company consists of three light truck platoons or a total of 60 2 1/2-ton trucks, a maintenance section, and a medium truck platoon which has one POL squad of ten 5,000 gallon fuel tankers and a cargo squad of ten 5-ton tractors and twenty 12-ton semitrailers; the semitrailers are used, in part, for mobile storage. In the mechanized infantry division there are two POL squads or a total of twenty 5,000 gallon fuel tankers. Based on 75% availability of cargo vehicles, the company can haul 276 short tons of general cargo. One POL squad can transport 43,000 gallons of fuel in one lift.

The Maintenance Battalion performs third echelon maintenance for all maintainable equipment in the division except for signal cryptographic (performed by the Signal Battalion), EAM (performed by the Administration Company), and medical (performed above division level). The Maintenance Battalion also provides repair parts for all equipment for which it is responsible to maintain, vehicle recovery and evacuation service, and operates maintenance collecting points in the division support area and the forward areas. The Headquarters and Main Support Company is located in the division support area and provides backup support to the forward support companies and third echelon maintenance for division troops. One Forward Support Company is normally located in each of the brigade trains areas; it provides third echelon maintenance service and repair parts to all the units attached to the brigade as well

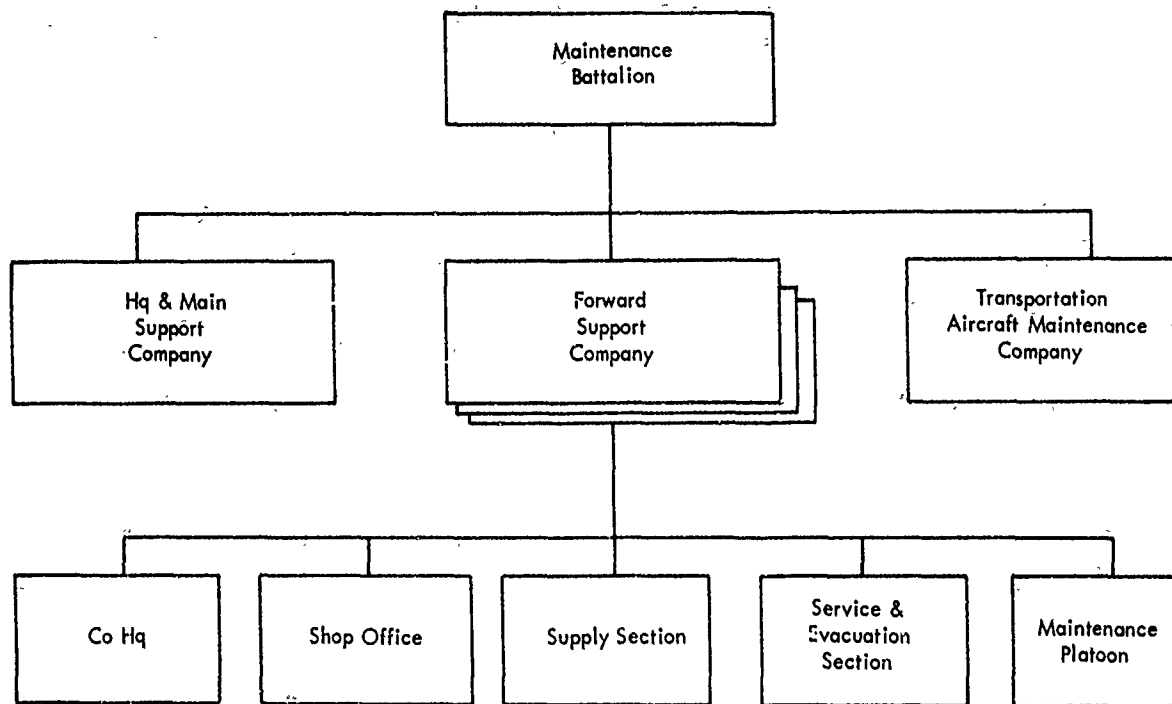


Figure 5. Maintenance Battalion.

as other units operating in the vicinity of the brigade area. This unit, in conjunction with the forward supply section of the Supply and Service Company, also establishes a maintenance and salvage collecting point in the brigade area and/or along the brigade axis of supply and evacuation. The Forward Support Company concentrates its third echelon efforts on engineer, ordnance, and signal equipment; other equipment requiring third echelon repair is sent to the Headquarters and Main Support Company. The Aircraft Maintenance Company provides third echelon maintenance and aircraft repair parts for all aviation units within the division; its service is by no means limited to the Aviation Battalion. In fact, it will frequently have a maintenance element forward in each brigade area to support the brigade aviation section.

We have seen what is available at division level to provide logistical support; we will now turn our attention to the combat battalion. Our discussion of combat service support organizations at this level will be centered on the infantry battalion, with differences between the infantry and mechanized infantry battalion being noted where appropriate.

The key logistics personnel in the infantry battalion, in addition to the S4, are the battalion surgeon, support platoon leader, and the motor officer. Each is a special staff officer and each directly controls a combat service support unit in the battalion; all are under the staff supervision of the S4. The battalion surgeon commands the battalion medical platoon. He is responsible for insuring adequate medical support for the battalion, obtaining assistance from division as required, and preparing the medical evacuation plan. The support platoon leader wears two hats; in addition to being the support platoon leader, he is the assistant S4. His roles can be identified by job. When he is assisting the S4 in planning logistical support, he is operating as the assistant S4; when he is executing logistical actions, he is performing in his role as the support platoon leader. He commands the support platoon and is responsible for

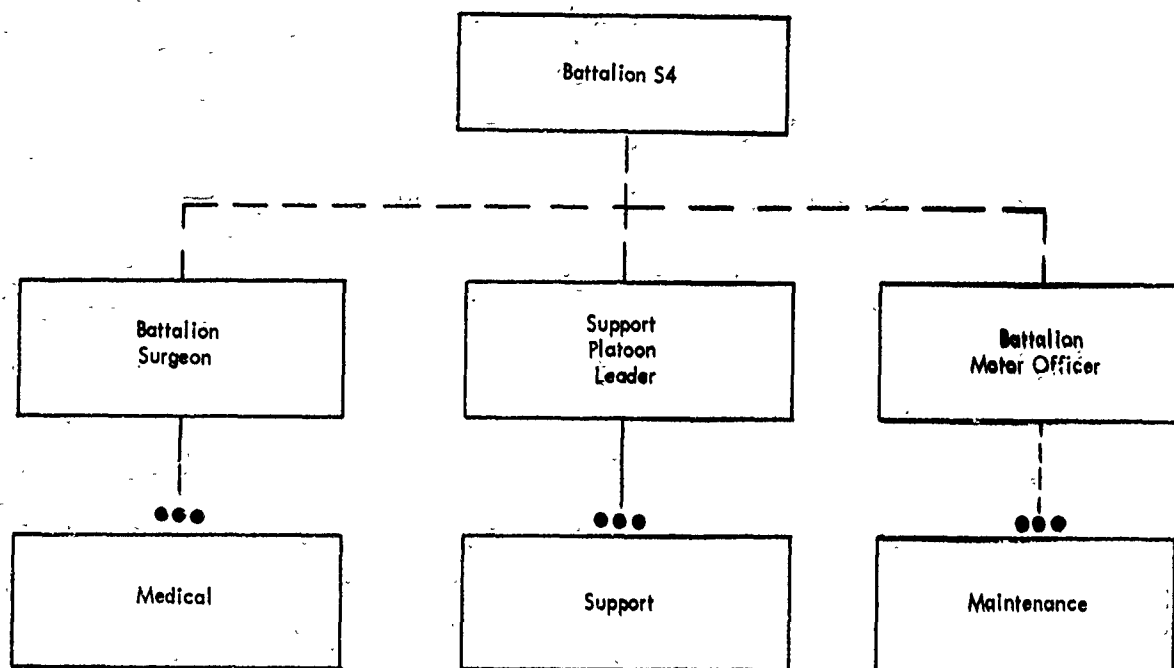
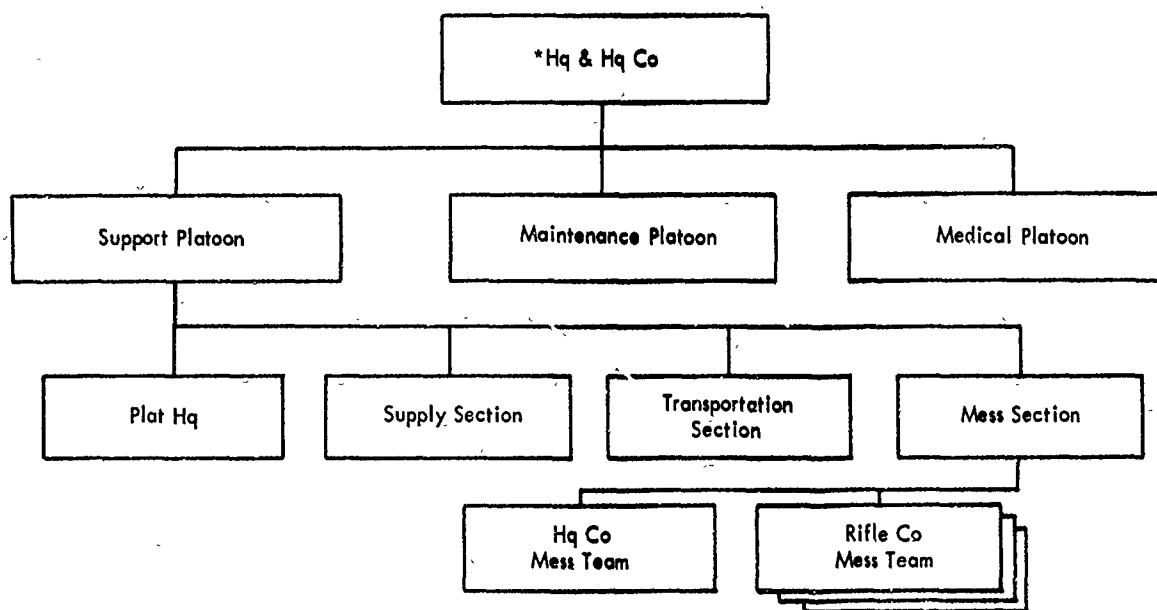


Figure 6. Key Logistics Personnel, Infantry Battalion.



*Units shown here represent only the logistical units organic to the Inf Bn Hq & Hq Co.

Figure 7. Logistics Units, Infantry Battalion.

the operation of the battalion field trains. The motor officer's primary responsibility is maintenance; however, in the infantry battalion, he also assists the S4 in the operation of the battalion combat trains. In the mechanized infantry battalion, he will not have the time to devote to this function because of the magnitude of maintenance operations in a mechanized unit. He exercises operational control over the maintenance platoon, which is commanded by a warrant officer.

Let us now look at the composition of each of these platoons. The medical platoon consists of three sections: the aid station, a medical evacuation section, and an aid man section. The aid station section includes the platoon leader (Surgeon), and a Lieutenant, MSC, and seven enlisted personnel; the medical evacuation section includes thirteen men and six 1/4-ton field ambulances; and the aid man section has twelve company aid men. Normally, four aidmen are attached to each rifle company; this permits one aidman per rifle platoon and one to operate the company aidpost. This unit is organized the same in the mechanized infantry battalion, except that there are two APC ambulances, and carrier CP vehicle, and three 1/4-ton field ambulances; the APC are used for battlefield recovery, and the carrier CP vehicle is used as a treatment vehicle.

The infantry battalion maintenance platoon consists of a warrant officer and 23 enlisted personnel. Equipment includes three 2 1/2-ton trucks with 1 1/2-ton trailers, two 3/4-ton trucks with trailers, a 1/4-ton truck with one AN/VRC-46 radio, and a 5-ton wrecker. The maintenance platoon of the mechanized infantry battalion has a warrant officer and 38 enlisted personnel, two 2 1/2-ton shop vans with 1 1/2-ton trailers, two 3/4-ton trucks with trailers, and one AN/VRC-46 radio mounted in a 3/4-ton truck, a 5-ton wrecker, and two recovery vehicles (M578) with AN/VRC-46 radios.

The support platoon is responsible for the procurement and distribution of all classes of supply and for the preparation of rations. Within the platoon, in addition to the platoon headquarters, there is a supply section, transportation section, and a mess section. The supply section is under the direct supervision of the supply warrant officer. It is this section that prepares formal requisitions for the battalion, except for medical expendables and automotive and signal repair parts. Medical expendables are requisitioned by the medical platoon and obtained through medical channels. Automotive repair parts, which include both engineer and ordnance items, are requisitioned by the maintenance platoon. Signal repair parts are requisitioned by the communications platoon. The purpose for this division of responsibility for repair parts at the battalion level is to permit the user to requisition directly from the forward support company as he maintains his own repair parts and knows when he needs to replenish his stock; further, many of the repair parts transactions are on a direct exchange basis. The supply section is also responsible for computing data on usage factors for each class of supply, operating the support platoon CP, maintaining the battalion property book, and supervising the distribution of Class II and IV supplies. The transportation section of the infantry battalion consists of two 5-ton trucks, six 2 1/2-ton trucks, four 1 1/2-ton cargo trailers, four 1 1/2-ton water trailers, two truck-mounted tank and pump units, and two trailer-mounted tank units; the mechanized infantry battalion transportation section has fourteen 5-ton trucks, eight 1 1/2-ton cargo trailers, four 1 1/2-ton water trailers, four truck-mounted tank and pump units, and four trailer-mounted tank units. This section is concerned primarily with the distribution of Class III and V supplies. The 1200-gallon fuel tanker, formerly a part of this section, has been replaced by a truck-mounted tank and pump unit and a trailer-mounted tank unit. Each truck-mounted tank and pump unit consists of two 600-gallon fuel tanks and a power driven pump; each trailer-mounted tank unit consists of one 600-gallon fuel tank with a gravity dispenser. The tank and pump unit and the tank unit are portable and air droppable. In the infantry battalion, the tank and pump units are transported on the two 5-ton trucks and the tank units on two of the 1 1/2-ton cargo trailers; the six 2 1/2-ton trucks and the remaining two 1 1/2-ton cargo trailers are used to transport ammunition. Likewise,

in the mechanized infantry battalion, the four tank and pump units are carried on 5-ton trucks and the four tank units on 1 1/2-ton trailers, leaving ten 5-ton trucks and four 1 1/2-ton cargo trailers to transport ammunition. The two truck-mounted tank and pump units coupled with the two trailer-mounted tank units give the infantry battalion a 3,600 gallon fuel carrying capability; with four of each of these units in the mechanized infantry battalion, it has a fuel carrying capability of 7,200 gallons. Since the tank and pump units and the tank units are portable and can be removed from their carriers by the 5-ton wrecker, the 5-ton trucks and 1 1/2-ton cargo trailers can, if necessary, be used to carry ammunition or other supplies for limited periods of time. The mess section has 29 enlisted personnel and four 2 1/2-ton trucks with 1 1/2-ton trailers. It is capable of operating on a centralized or decentralized basis; the section can be divided into four mess teams for decentralized operations. In combat they will normally operate on a centralized basis, being located in the battalion field trains.

These are the organizations, the support command and the logistical elements of the combat battalion, through which the logistical support for the fighting units flow. Just what logistical support do we provide? Or to put it another way, what are the functions or major areas in the field of logistics? At the battalion and brigade level, we identify five major areas. They are Supply, Medical Service, Transportation, Service, and Miscellaneous Related Activities. The area of Supply involves determining requirements, requisitioning, procurement, temporary storage, and distribution of supplies. Medical service is centered on evacuation and temporary or limited treatment since we do not have hospital facilities organic to the battalion or, for that matter, the division. The area of Transportation concerns the provision of transportation for procurement and distribution of supplies; the vehicles that are available for this purpose may be used for movement of troops in tactical operations, but they are used primarily in the execution of logistical support. There is another aspect of transportation and that is the control of traffic; this aspect has only limited application at brigade and battalion level. It consists of posting of directional and directive type signs and organizational control of unit movements. Service, which we frequently call Other Services to differentiate from Medical Service, embodies maintenance, bath service, and food service, the most important of these at the battalion level being maintenance. And finally the area of Miscellaneous Related Activities. This function of logistics is performed almost exclusively by the S4 himself, for this involves the preparation of the logistical estimate, the plan for logistical support of the operation to include designation of trains areas, and the preparation of administrative instructions for dissemination.

We have discussed the composition of the organizations designed to provide logistical support. We have briefly reviewed the major areas of logistics. We will now consider how logistical support is implemented in the infantry and mechanized infantry battalion. We will start at the place where logistical operations take place, the trains. Trains, by definition, consist of the personnel, equipment, and vehicles necessary to provide logistical support for the unit (Note: See Figure 10 for schematic of trains). The rifle company is the lowest echelon that establishes a trains. In the infantry rifle company, the trains consist of little more than the supply sergeant, armorer, and a 2 1/2-ton truck with 1 1/2-ton trailer. In the mechanized infantry rifle company, the trains is expanded to include a 13-man maintenance section which is authorized to perform second echelon maintenance. Even though the trains are small at company level, there are several activities which are conducted at or found in the trains area. It serves as a distributing point for ammunition. It is the place where second echelon maintenance of weapons and radios and, in the mechanized rifle company, second echelon maintenance of vehicles is performed. It may be the location for the company aidpost; it may be the location for the company mess area. It serves as a storage point for bedrolls in the infantry rifle company (on the 1 1/2-ton trailer) when the unit is in the attack. The company trains of the mechanized rifle company may be divided into combat and field trains. The combat trains are forward in the company area and have the mission of providing immediate, responsive logistical support. The company field trains are located to the rear in the battalion field trains and, if established, would consist of the company baggage truck.

Since the trains are extremely small in the infantry rifle company, they are not divided into combat and field trains. Moving to the next echelon we find the battalion trains are habitually divided into combat and field trains. The combat trains is not a fixed organization. It too is designed to provide immediate, responsive support and is tailored to meet the requirements of the situation. It will usually consist of Class III and V distributing points, a maintenance element from the maintenance platoon, and the battalion aid station. It is normally located in the general vicinity of the battalion CP and within two to four kilometers of the FEBA. However, the majority of the logistical activity takes place in the battalion field trains which is located within the brigade trains, a distance of ten to fifteen kilometers behind the FEBA.

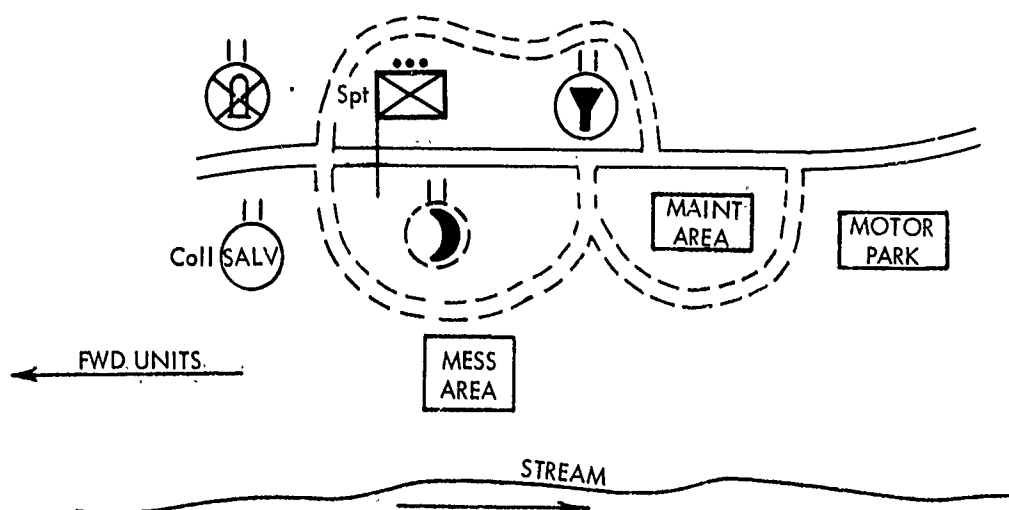


Figure 8. Composition of the Battalion Field Trains.

The field trains include, as a minimum, the support platoon headquarters, which is the CP of the field trains, Class III and V distributing points, a kitchen area, maintenance area, and motor park. As previously noted, the battalion field trains are normally located in the brigade trains area. The brigade trains includes the field trains of each of the attached battalions and the forward support elements of the division support command. At the minimum these forward support elements will include the forward support company from the maintenance battalion; a forward supply section, graves registration section, and a bath team from the supply and service company of the supply and transport battalion; and a medical company from the medical battalion. It is at the brigade trains - and this is the salient point of the brigade trains - that logistical operations are effected between the support command and the combat battalions. The brigade's responsibility for the trains is to designate locations for each of the installations in the trains and to control the movement and security of the trains. The forward support units from division operate under the control of their parent units and the field trains of the battalions operate under the control of their parent battalions. This is not to say that the brigade S4 or his assistant has no function in the trains. He determines when and where the trains will displace, coordinates the security of all elements in the trains, and is present to solve any immediate problems of operation between the elements from division and the battalion field trains. (Usually the assistant brigade S4 is the one physically located in the trains while the brigade S4 operates from the brigade CP.) In the division support area we find the main elements of the support command. These elements provide backup support to the forward elements and logistical support to the elements in the division that do not receive forward support. In addition to the support command, we may find the aviation battalion and the division airfield located in the division support area. And of course a water point from the engineer battalion.

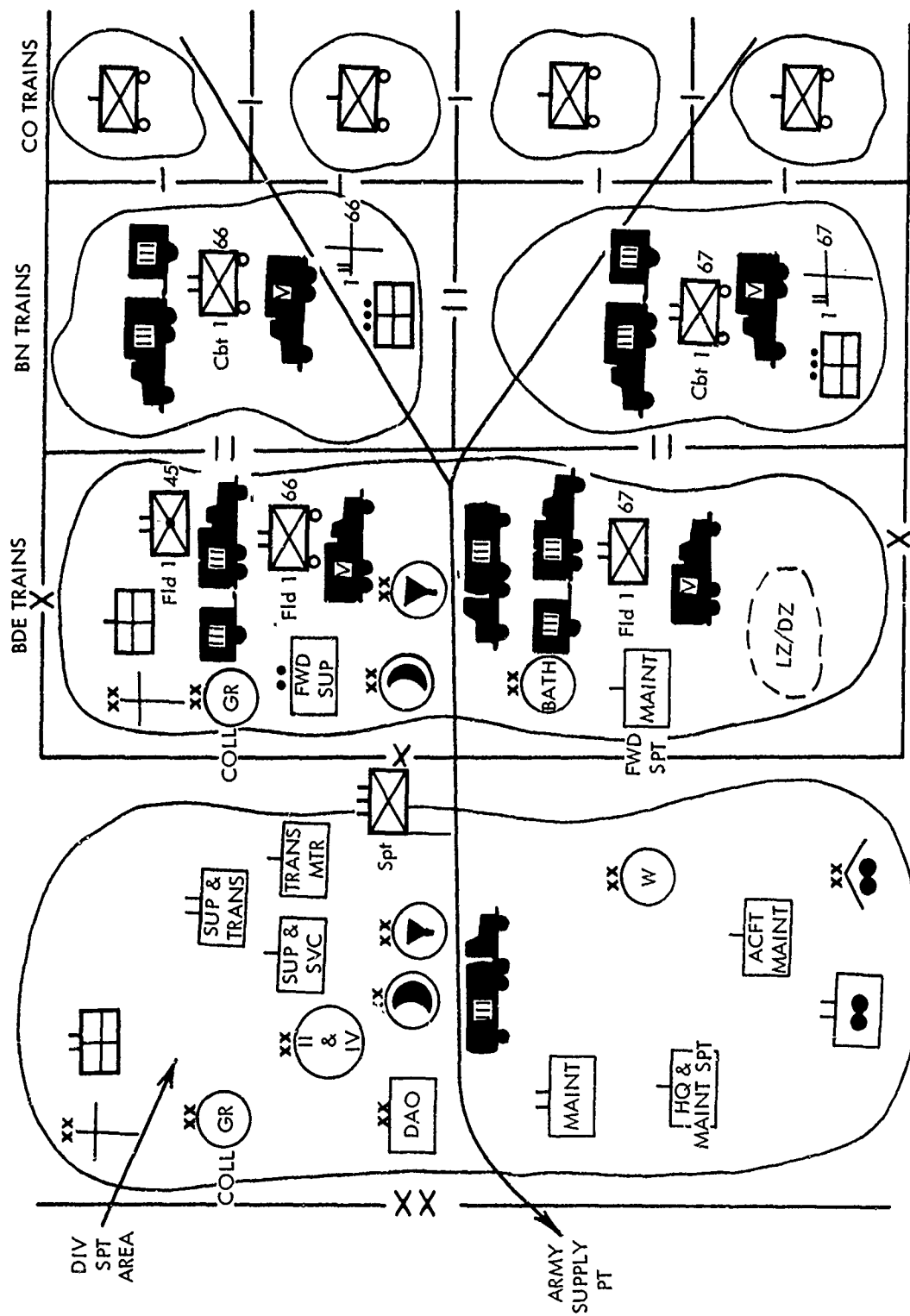


Figure 10. Company, Battalion, Brigade Trains, and the Division Support Area.

the division support area and a full tanker is dispatched to the brigade trains or a full tanker comes forward to refill the 500-gallon collapsible tanks. As the requirement for more fuel develops at division level, the 5,000-gallon tankers are sent to the army Class III supply point to refuel. Oil and lubricants are also stocked at the forward Class III distributing point in the brigade trains area. We see then that there is no requirement for a requisition for fuel; the system operates on a refill as required basis. The system is the same in the mechanized infantry battalion. Class V supply is again somewhat different than any of the others. The infantry battalion has six 2 1/2-ton trucks and two 1 1/2-ton trailers to use for transporting ammunition. We will again depict a hypothetical situation. Let us say there are three ammunition vehicles in the combat trains and three in the field trains. When the forward companies require ammunition, they submit an informal request to the combat trains by type and amount. Ammunition will then be sent forward or the company will be directed to pick it up at the combat trains. In the defense, the battalion will usually employ supply point distribution; in the attack it will normally be unit distribution. As the stock at the combat trains is depleted, the ammunition will be consolidated on one vehicle and the remaining two will return to the field trains. Two full vehicles will be sent forward to the combat trains. This procedure will work effectively providing the battalion employs balanced loads in loading ammunition vehicles. This technique will preclude transloading. When the empty vehicles return to the battalion field trains, a formal requisition is prepared by the supply section in the form of a transportation order and the vehicles are dispatched to the army ammunition supply point. En route a stop is made at the division ammunition office to have the transportation order validated. By this procedure, the division ammunition officer administratively controls ammunition expenditure within the division. The normal authorization for ammunition is the replenishment of the basic load; however, if there is an available supply rate in effect, a restriction on ammunition allowances, the DAO insures that the battalion is not exceeding the ASR. Upon obtaining the ammunition at the army supply point, the vehicles return to the battalion field trains and the cycle is complete. We see then that the division does not operate an ammunition distributing point nor carry a reserve of ammunition. There may be an exception to this procedure as in the case of a division involved in an exploitation operation. Under such circumstances, the turnaround time to the army ASP may be prohibitive; therefore, army may establish a forward mobile ammunition supply point in the division support area. This, however, is the exception rather than the rule.

The second area of logistics we listed was Medical Service. At the battalion level, this is primarily a matter of evacuation. Limited treatment is provided through the company aid men and the aid station facility. The evacuation section of six 1/4-ton field ambulances operates between the forward companies and the aid station. Evacuation from the battalion aid station to the medical company in the brigade trains area is a responsibility of division. It is effected by the ambulance platoon organic to the medical company supporting the brigade. Evacuation from the division clearing station is accomplished by medical units from army.

The source of transportation within the infantry battalion and brigade is the transportation section of the support platoon in each of the battalions. The other aspect of the function of transportation, that of traffic control, is mostly a matter of organizational control over unit convoys. The brigade does receive some support from the military police company. Usually a military police platoon is placed in support of each brigade; it has two functions: to operate a forward division prisoner of war collecting point and to assist in traffic control.

The fourth area of logistics, Other Services, as we previously stated, consists of maintenance, food service, and bath service. The latter two being self-explanatory, we shall focus our discussion on maintenance. Any discussion of maintenance within the infantry battalion and brigade must take into account the forward support company of the maintenance battalion. This company provides the brigade with one-stop third echelon maintenance service for all equipment, except medical and signal cryptographic. This one-stop service is of tremendous

importance to the infantryman. It means we no longer have to send the radio on a vehicle to signal, the canvas to quartermaster, and the vehicle itself to ordnance; it is all handled by a single agency. Second echelon vehicular maintenance operations in the infantry battalion are conducted at two places: the battalion combat and field trains. About one-third of the personnel of the maintenance platoon, a 3/4-ton truck, and the wrecker operate from the combat trains; the remainder of the platoon is found in the field trains. The mission of the combat trains element is to provide immediate second echelon maintenance service. Its service, however, is confined to repairing those deficiencies that can be corrected in a minimum of time (about one hour). It performs much of its service by means of contact teams. These teams are dispatched to perform on-site maintenance, if possible; if they cannot repair the vehicle on-site, they evacuate it to the rear. If it is a second echelon deficiency, it is evacuated to the battalion field trains; if it is a third echelon deficiency, it is evacuated directly to the forward support company in the brigade trains area. The forward support company also provides contact teams; usually called "work parties," to perform on-site third echelon maintenance and to provide technical assistance to the battalion maintenance platoons. Evacuation of vehicles is basically a responsibility of the using unit; however, this responsibility does not mean that a vehicle must be evacuated all the way to the forward support company if it is infeasible to do so because of the tactical situation. In such instances, the vehicle can be evacuated to a maintenance collecting point. For example, in the attack several of these maintenance collecting points would be established along the route of supply and evacuation. The vehicle would then be picked up by the forward support company, either as it moves forward or by sending recovery vehicles to the collecting points on a periodic basis. Allied to maintenance is the provision of repair parts. Much of this service is accomplished on a direct exchange basis and is another example of how service is facilitated by the location of both the forward support company and the battalion field trains in the brigade trains area. This discussion applies equally to the mechanized infantry and the tank battalion, except that second echelon maintenance is also performed at the company level, and that the combat trains maintenance element will be larger in size and vary in composition.

The last function of logistics requires little discussion. This is an area wherein most of the work is performed by the S4 himself: the preparation of his logistical estimate, logistical plan, and administrative instructions, whether they be oral or written, to implement the logistical plan.

A major advantage of the ROAD division is the ease with which the commander can tailor his forces; he can readily attach from two to five combat battalions to a brigade without creating any problems of control. Likewise, and a fact which is frequently not mentioned, logistical support can be tailored. Most of the illustrations used here have been based on a three-battalion brigade; however, when the brigade is larger or smaller, the division forward support elements operating in support of the brigade will be tailored accordingly. The support received from the support command is of course directly linked to the success of logistical support operations in the combat battalion. Another factor that will affect the success of the logistical system is the operation of the brigade trains. The forward support elements from division are controlled, that is they receive their orders, from their parent units, and the battalion field trains are controlled by their battalions. The brigade S4's role is clearly one of monitoring the implementation of logistical operations and maintaining liaison between these elements. If he goes beyond this, if he consolidates the field trains of the attached battalions and establishes centralized distributing points for each class of supply, the combat service support system will break down and logistical support will be seriously impaired. The system, as designed, definitely places the impetus of support from the rear to the front, and this is as it should be. Inherent in the system by virtue of its functionalization is the simplicity of operation. The forward support company provides the combat battalion with one-stop maintenance service. The supply and transport battalion provides "one-stop requisition service" for all supplies, except Class V, medical, and repair parts. No longer do we need

go to the quartermaster for rations and fuel, to the ordnance for vehicles and weapons, to the signal for radios, to the engineers for maps. Logistical support, as it always has been, is getting the right support and the right people to the right place at the right time. The combat service support system in the ROAD division permits us to provide logistical support for the combat battalion easier, faster, and better than ever before.

CHAPTER 9

DEPARTMENT OF NONRESIDENT INSTRUCTION

MAJOR DAVID E. WARD

Chief, Operations Section, Department of Nonresident Instruction

In reviewing the schedule for your activities while you are here at Fort Benning, it can be noted that you will see static displays and demonstrations of the hardware used by today's Infantryman. You will also be told of the tactics and techniques for employment of this hardware. During this short presentation, I will not dwell on these matters. Rather, I will familiarize you with the agency of the Infantry School which is responsible for providing instruction in hardware, tactics, and techniques to the nonresident students who are not fortunate enough to attend the Infantry School. The relationship of this department to the rest of the Infantry School can best be explained by an example:

The Infantry School can be likened to a radio or TV studio. The resident students and visitors could be considered as the live audience that might be found in such a studio. The Staff and Faculty represents the announcer who is face to face with the live audience. This department (DNRI) serves as the home receiver set whereby the vast unseen audience receives the message emanating from the Infantry School.

The receiver set is powerful and so is the signal being broadcast. Nonresident students are reached throughout the free world.

The mission of the department assigned by USCONARC and the Commandant of USAIS is divided into three functional areas: writing, formating, and printing of instructional materials; administering of the material to nonresident students; and liaison with agencies supported.

I believe you will realize the magnitude of these functions as we progress. More nonresident students receive instruction through the activities of DNRI in any one month than there are resident students here at the School in a full year.

Organizationally within the Infantry School structure, DNRI is on the same level with the resident Instruction Departments. Naturally, all instruction presented here in residency cannot be duplicated.

The same directives from USCONARC and the Commandant that assign our mission, specify five major programs to be administered by the department. These five programs are considered adequate to meet the needs of all categories of nonresident students.

I will cover the pertinent aspects of each of these programs and the support rendered by the department for each program. First, though not necessarily in order of importance, is ROTC. The ROTC program is made up of four divisions.

The Infantry School is responsible for providing approximately 90-95% of the military educational materials made available for ROTC programs being conducted throughout the United States. All other branch schools combined provide the remaining 5%. The reason for the heavy load imposed on USAIS is that we provide all materials for colleges and universities offering a General Military Science (GMS) program. Most institutions now conduct a GMS curriculum. In addition, support of the Military Schools is the sole responsibility of the Infantry School.

The Senior Division is a commission-producing course and is the source of the bulk of the young lieutenants who come on active duty today. Upon commissioning, the student next attends the appropriate basic course for his branch. There are 247 schools with Senior Division ROTC; 204 are GMS-type and 43 are Branch oriented. The latter 12 are Infantry branch.

The course is spread over 4 years. It includes instruction at the institution, where classroom instruction is given, and a six weeks summer camp, conducted between the 3d and 4th years.

These summer camps are hosted by 7 military installations. One of the larger summer camps is in session at Fort Benning at this time. All seven camp sites are teaching a GMS curriculum using instructional materials prepared by USAIS.

There are 40 Military Schools Divisions which conduct this ROTC level, 9 of which are Junior Colleges and are commission producing. The other 31 are military institutes such as Staunton Military Academy, which offers ROTC through high school level. The students normally wear uniforms and live in a military atmosphere.

There are 255 Junior Division high schools which conduct ROTC. This program is expensive since there are over 200 officers and 700 Noncommissioned Officers of the Active Army assigned as instructors.

There are 109 National Defense Cadet Corps high schools in the NDCC Division. The major difference between this division and the regular Junior Division is that no Active Army instructors are assigned. The schools pay for their own military instructors, who are usually retired military or reserve personnel not on active duty.

The four ROTC divisions total approximately 270,000 students. Major changes in the ROTC picture are forecast. The program is under study at Congressional level. The senior division schools may be authorized to conduct a two-year program with an expanded summer camp or the four-year program now offered, at the option of the school. There is much controversy over the high school level of ROTC. OSD recommended that the Junior Division be discontinued and all schools converted to NDCC. At the same time there are those who feel that the Junior Division should be increased instead of being reduced. The cost of such an increase would be considerable. The city fathers in those cities with large ROTC enrollment in the high schools strongly support retention of the program.

NATIONAL GUARD

National Guard State Officer Candidate Schools is our next program for discussion. This program is of utmost importance to the Army National Guard since it is their principal and virtually only source of second lieutenants. This is a relatively new program. It was started in 1955 with an enrollment of 800 and has grown rapidly to an enrollment of approximately 3,000. There are now 58 academies operated by 49 of the 50 states and the District of Columbia. Puerto Rico also opened its academy on the first of this month.

The program is administered by the State Adjutant General in each case with National Guard officers assigned as instructors. DNRI develops the POI in coordination with the National Guard Bureau. This POI closely parallels the resident OCS Course for Reserve Components, which is offered twice annually here at the Infantry School. DNRI prepares all the instructional material, including instructor and student problem sets, special texts and handbooks, and vu-graph transparencies used in the program. The 175 problems written for this program are also distributed and used extensively by the PMSs in all Senior Division ROTC institutions.

I mentioned earlier that this is the source of most of the new lieutenants of the National Guard. True, the resident course for reserve components here at USAIS provides some 400 graduates. However, not many Guardsmen can take 8 weeks off from civilian employment to attend this commissioning course. For this reason, the State OCS program was originated. This course requires one year to complete and is divided into three phases. The first of these is a two-week summer camp, or shake-down period. Next, the student attends 8-10 weekend

assemblies at the academy within the state, such as the one in Peekskill, New York. This school has 440 students this year. During these weekend assemblies, he travels at his own expense and is not paid for the drills. He is harassed and instructed by tactical officers who have been to the Infantry School to learn to emulate resident tactical officers.

The final phase (Phase III) is another two-week summer camp and commissioning.

Even though the instruction is Infantry oriented, the graduate is branch immaterial and is appointed to fill a vacancy in whatever branch may be open in the state. This program is serving its purpose well; however, not enough graduates to fill the guard's needs are realized. DNRI maintains close direct liaison with the National Guard Bureau on this program and we grade all examinations of the students participating. After commissioning, he must attend the Resident Officer Basic Course or complete this course by Extension Course means in order to be promoted to the grade of captain.

USAR

The next program administered is USAR Schools. These schools are conducted by reserve officers, for reserve officers not on active duty, under the supervision of Army Commanders. The schools are organized with departments to teach Branch Courses as necessary. Naturally the Infantry has the largest number of departments in these schools. DNRI provides instructional material to 178 Infantry Departments located in the United States, Europe, Hawaii, and Puerto Rico.

The POI is at the Career level and is developed by DNRI within guidance provided by USCONARC. It closely parallels that of the resident ACAR Course offered here at Fort Benning. The resident student completes ACAR Course here in 19 weeks while the student in the USAR Schools program requires 4 years to complete the course. Each annual period is divided into two phases. The first phase includes 24 two-hour periods conducted at armories in the local communities. This is followed by a two-week ADT period in the summer, conducted at one of 5 locations: Benning, Devens, Lewis, Europe, and Hawaii.

Students and faculty are on paid status during the two-week ADT phase. The students do not receive pay for attending the 24 two-hour instructional periods at the armories. The instructor may be a banker or a lawyer by day and an instructor at night. Enrollment has also grown rapidly in this program. One reason for the increase is the promotional aspects required by the Reserve Officer Personnel Act (ROPA). Two of the four years must be completed for the student to qualify for promotion to major and the student must complete all four years for lieutenant colonel. DNRI grades all examinations of the students and certifies his military academic credits to Reserve Promotion Boards. This requires extensive records administration.

STAFF TRAINING

The fourth major program is Staff Training for Reserve Component Troop Program Unit Staff Officers. This is the only program we offer which is directed toward troop units. Actually, we have very little writing requirements connected with this program. We select resident and nonresident problems considered appropriate for training of staff officers assigned at brigade level and below. These are listed in a catalog for wide distribution and units requisition material from us based on this listing. Upon receipt of the material, the commander assigns one of his officers to present the instruction.

All of the programs discussed so far have been concerned with the bulk distribution of military instructional materials to be presented by instructor personnel in some form of school environment.

EXTENSION COURSES

Now we turn to our final program, Army Extension Courses, where we deal with the individual student, utilizing the US mails.

In order that we have common understanding, these are the elements of extension courses: lesson - basic element; subcourse - one to nine lessons; and extension course - one to many subcourses covering the POI.

The Infantry School has a larger enrollment in its Extension Course Program than any other service school. Part of this increase can again be attributed to the promotion aspects imposed by ROPA. Courses are offered to meet the needs of students at each level of training. The lowest level is the NCO Leadership and Career Development Course. This course is very short, consisting of one subcourse with 20 credit hours awarded for completion. Participation by NCOs and potential NCOs is encouraged by many reserve and active duty commanders.

Next is the Precommission Course aimed at the OCS level. This course satisfies the military educational requirements for a reserve commission. This course is offered only by the Infantry School to all branches of the Army except WAC personnel, who are offered a similar extension course by the AG School. The Precommission Course is currently under major revision. Total credit hours required for completion will be reduced from 307 to 220. No weapons subcourse was previously included in the POI, but is now being added.

The Infantry Officer Basic Course of 160 credit hours parallels the resident Infantry Basic Course. Completion of this course satisfies the military educational requirements for promotion to captain.

The highest level for extension courses offered by USAIS is the Career level. The Career Extension Course is offered in two versions: (1) E-24 Course of six phases (one each year) of pure extension course work designed for completion in six years; and (2) C-24 Course of five phases, one of which (Phase III) is mandatory active duty here at USAIS for two weeks, and one (Phase V) which is optional ADT or extension courses. If the student attends both ADT phases, he can complete the course in three years; otherwise, four years are required. Completion of one-half of either of these versions will satisfy promotion requirements for major. Completion of the entire course is necessary for lieutenant colonel.

The student in each of the courses I have discussed is seeking one thing - a diploma. The one issued by DNRI for a course is signed by the Commandant of the Infantry School and is worded by regulations to read that it is equivalent to the resident counterpart course. The next level of training in extension courses is the Command and General Staff College.

DNRI ORGANIZATION

Now that we know who the students are and what courses they study, I would like to explain to you DNRI's methods. The methods used here at the Infantry School are somewhat different from those of other service schools; although other service schools are gradually adopting our procedures and organization.

First, we look at the organization of the Department.

The Director is a colonel; the Deputy Director a lieutenant colonel. The Operations Section, is the principal and only staff section; it coordinates preparation of POIs and instructional material, printing and shipping of material, liaison visits, and budget and supply matters.

An Educational Specialist provides professional advice pertaining to suitability of instructional materials and testing techniques.

A Reserve Components Committee administers those programs (ROTC, NGOCS, USAR Schools, and Staff Training) which involve instructor-taught courses.

The Army Extension Course (AEC) Committee administers all extension courses to the USAIS including maintenance of all records on individuals

The Instruction Materials Preparation Committee (IMP) Committee, of the Infantry School differs greatly from most other service schools. The instructional materials used by our non-resident students are prepared by writers and editors assigned to DNRI rather than by the resident instructors. This will be explained more in detail later.

Next, I will trace items of instructional material from conception through its entire cycle. The writing requirement is generated by a directive for change from USCONARC or a major revision necessitated by changes in doctrine, tactics, or techniques in resident instruction. I wish to emphasize that DNRI does not originate doctrine, tactics, or techniques. Rather, we adapt resident instruction into a format suitable for use by the various categories of nonresident students.

When the POI is developed or the revision is finalized, writing requirements are determined from the POI. The requirements are given to the Chairman of IMPC who assigns the writing task to one of his military or civilian writers. The writer then proceeds with: research; contact with the resident instructor; attendance at resident classes; editorial review; and formal concurrence.

The material is then typed or litho and forwarded to the Third Army Field Printing Plant. The DNRI budget amounts to approximately \$250,000 annually. Of this amount, over half is used for printing nonresident instructional materials. Although dollars expended have little significance, it is meaningful to note that this amount constitutes approximately 40% of the workload of this facility which services all of Third Army area.

The material is received from AFPP in bulk form and placed in one of the seven DNRI warehouses. Here the material is collated by hand. Manual means are necessary since varying sizes and thicknesses of material must be married into mailing packets or shipping cartons.

After collation the material is posted to stock record cards and placed on stockage shelves, ready for distribution. The department runs its own sub-post office, with approximately 175,000 pieces mailed each month. The material, when mailed or shipped in bulk, is then utilized by the individual AEC student in the quietness of his home or by an instructor who teaches students enrolled in one of the nonresident courses we discussed earlier.

After student actions, the material for grading and processing starts to arrive. Approximately 50,000 pieces are received each month. The difference in outgoing and incoming quantity results from the fact that students retain much of the reference material provided.

When the material is received, it goes to one of our record clerks who marries the material with the Master Card. It then goes to the Data Processing Office (DPO) which is located adjacent to DNRI and is processed mechanically. We use the services of DPO extensively in the AEC program, including machine grading and print-out instructions for shipping additional material to the student. Enrollments, subcourse Completion Certificates, and cancellations are also provided. This is accomplished with the UNIVAC 120. With more sophisticated equipment, we will be able to automate more procedures in our programs. After grading, the record of the student must be up-dated. Present procedures necessitate keeping of over 1,200,000 record cards on our extension course students alone.

Another major function of DNRI is that of Student Counseling, both in person and by replies to queries received by mail. This amounts to approximately 600-800 letters weekly.

SUMMARY

In summary, these are the 5 categories of students, or as we refer to them, the 5 programs.

The objective of the department is to ensure that the nonresident student keeps PACE with his resident contemporary, by offering him Prompt, Accurate, Courteous, and Efficient service. Inherent in this objective is the vital necessity to ensure that our instructional materials keep PACE with resident instruction. It is our desire to assist the Infantry School in making the Infantryman ready around the world.

CHAPTER 10

ORIENTATION ON HumRRO TRAINING RESEARCH AND DEVELOPMENT¹

Cari J. Lange
Human Resources Research Office
Infantry Human Research Unit
Fort Benning, Georgia

HumRRO is pleased to have this opportunity to discuss our training research and development with you. Many of you are already acquainted with HumRRO--we are a contract agency of the Department of Army, operated by The George Washington University, with Central Offices in Alexandria, Virginia. There are seven HumRRO research laboratories, two of which are in Alexandria, and the others are located at Army Centers--the Infantry, Armor, Air Defense, and Aviation Centers--and at the Presidio of Monterey.

HumRRO's mission is to conduct research in the fields of training, motivation, leadership, and man-weapons system analysis. Currently, there are 38 research Tasks underway and 8 exploratory studies, which are preliminary to Task Development. Concerning our mission as a whole, our work in motivation, leadership, and system analysis finds its principal application in the development of new training techniques and programs.

Much of HumRRO's research has been directed toward development of new training techniques and programs of instruction. Contributions toward the improvement of programs of instruction have been in these areas: determining the training objectives, developing improved methods of instruction and establishing training content, evaluating newly developed training, and developing methods of training management to promote learning, develop positive attitudes, and promote efficiency in use of training time.

Today I would like to discuss with you some HumRRO work that is of particular relevance to the Infantry. There are a number of HumRRO products currently in use with which you are no doubt familiar. TRAINFIRE I is, perhaps, one of the best known results of HumRRO research. The TRAINFIRE research is a good illustration of how a program was developed by systematically examining the requirements of combat firing and then determining training objectives and content in terms of skills needed in combat.

The Basic Land Navigation training currently given in BCT was developed at the Infantry Unit. Here again, the course was developed from a determination of precise objectives based on requirements for land navigation under modern battlefield conditions.

The TRAINLEAD film series, produced under the direction of the Leadership Committee here at Fort Benning, was based on the results of our first effort in the area of leadership instruction. An experimental study was conducted to evaluate this approach to leadership training. Based on recommendations from this research, the TRAINLEAD film program was initiated. These films, which depict realistic problem situations up to a critical point at which the leader must take action, have been in use for some time throughout the Army. One of the chief values in this approach is the practice students get in dealing with situations which they will meet in the future. The films, of course, present the problems in a very realistic manner, and come close to simulating the situation as it would actually occur.

¹ An orientation prepared for presentation to the Infantry Instructors Conference on 18 July 1963. Opinions and conclusions are those of the author and do not necessarily represent views of the Human Resources Research Office or the Department of the Army.

I would like to turn now to a discussion of more recent HumRRO products which relate primarily to the Infantry. One of the major areas of our work during the past few years has been on training the basic soldier, that is, the Light Weapons Infantryman (LWI). Our first major effort on this problem was devoted to determining the critical combat performances of the LWI and the skills and knowledges required by these performances. The result of this effort is a report which describes in considerable detail the combat performance requirements for the LWI. The report describes approximately 100 different performance areas and the pertinent skills and knowledges required for each combat performance. These were developed primarily for use in subsequent research toward the improvement of training for the LWI, but they have been used in revision of ATP 7-17 and pertinent subject schedules.

Subsequent to research on the determination of the critical combat performances required of the LWI, we have worked on the development of improved training. Recently completed is a 10-hour course in Advanced Land Navigation, to be taught at the level of Advanced Individual Training. This course is a continuation of the Basic Land Navigation course which was developed for BCT. In conducting this research, a set of dimensions were identified and defined which can be used to objectively define levels of difficulty in land navigation. These dimensions included such variables as amount of vegetation, average amount of slope, check point recognizability, etc. Courses at three levels of difficulty, easy, moderate, and difficult, were defined using these dimensions. In evaluating the newly developed program of instruction, we found substantial improvement in the ability of soldiers to navigate the difficult course after completing the new training.

Currently, research and development are being done on a 52-hour block of instruction in squad tactical training for the LWI. This training is being designed to emphasize the individual's ability to integrate previously learned skills, coordinate actions with fellow team members, and carry out tactical orders. Particular attention is being given to sequencing the training in order of complexity and difficulty, and maximum possible use is being made of practical exercises in which each soldier practices skills required of him. Procedures which provide each individual soldier with knowledge of the results of his performance are being developed for this field training. This work when completed will provide a block of training for ATP 7-17 which is based on systematic study of training objectives and which utilizes improved methods of instruction.

Our investigation of training for Infantry operations during limited visibility resulted in the development of a core curriculum for night operations training. This curriculum describes the fundamental knowledges and skills required for Infantrymen in night operations. It is being used as the basis for further research on training for night operations.

Earlier, when I discussed the TRAINLEAD films, I mentioned that they represented our first effort in leadership training. Further work in this area has included an investigation into the kinds of leader actions that are effective in maintaining highest unit performance. After extensive interviews with members of both TO&E and training divisions, we found that certain patterns of effective leader actions were related to the leader's influence in his unit, and, consequently, to his ability to motivate his unit to high, long-term performance. These patterns of leader actions constitute what we call the functional role of a small unit leader. This functional role emphasizes appropriate leader actions which serve to increase performance of the small unit.

Using this knowledge, we developed a 16-hour program of instruction for teaching student officers to think and act in terms of this functional concept of small-unit leadership. The course consists of instruction in the concept of the functional role of the small unit leader and practical application of this instruction in realistic leadership problem situations. Since successful execution of the functional role of the leader requires that he analyze performance situations and select an appropriate course of action that takes account of important considerations, the skits are a crucial part of this course. Throughout the course, emphasis is given to why specific actions are appropriate or inappropriate. The objective is for the student to develop understanding.

The OFFTRAIN course was formally adopted last year for use in the advanced ROTC program. Further implementation is being considered by CONARC.

While on the subject of our leadership training program, I would like to mention a project of the HumRRO Unit in California dealing with preparatory leadership training for potential non-commissioned officers. The objective of this research was to develop a procedure for identifying men of special promise and, then, to provide them, while still recruits, with preparatory training and experience in order to form a reservoir of potential leaders from which the Army could draw.

After a period of assessment and development, a 2-week course was tried experimentally in connection with AIT for Light and Heavy Weapons Infantrymen. This course was implemented by CONARC in 1961, and a course to train Army personnel to establish leadership preparatory courses at several Army Training Centers was developed and administered.

I have now brought you up to date on HumRRO's recent endeavors toward solving Infantry problems. Now I want to tell you something about our ongoing tasks--about the projects we are working on now at the Infantry Unit.

We are systematically continuing our investigations of leadership from our earlier work which I have already described. Our most recent Task, known as Task LEAD, is directed toward improving officer training in the critical skills required for effective combat leadership in small Infantry units. While the emphasis in our previous leadership research was placed primarily on the interpersonal aspects of junior officer leadership, our present work is directed toward improving the competence of the leader in skills required for leading a unit in combat.

Our first approach to this problem was to identify the critical combat skills and knowledges required of the Infantry rifle platoon leader. A questionnaire covering in detail the leader's activities and responsibilities in all situations of the various tactical phases of combat was developed and used to collect data from units of the 7th Army during battle group ATTs. An analysis of these data is now being conducted, and, when completed, should provide us with information about the kinds of leader behaviors that are essential in combat. This analysis, supplemented with reports of combat actions, will provide the basis for further research on a program of instruction in combat leadership.

Our second LEAD Subtask is dedicated to applying programed instructional techniques to current tactics materials with the long-range goal of teaching all the fundamental combat skills and knowledges within an automated framework. Programed instruction presents the material to be learned in small steps with only one new "bit" of information in each step. The student makes a response at each step and is given the correct answer before going on to the next step.

The advantages of this system are that the student actively participates throughout the instruction, he gets immediate knowledge of the correctness of his response, and he may proceed at his own pace.

So far, a program in defensive tactics has been written and given experimental tests.

A few sample frames from this program are shown in Figures 1-8.

You may recall that in discussing our research on leadership, our chief emphasis has been placed on the role and function of the "small-unit" leader. Our research has not been limited to the leader, however; the entire "small unit" has been a prime object of some of our most recent research. Our ultimate goal in this area of work is to develop procedures for increasing effective team work in small, Infantry-type units; more particularly, increasing the effectiveness of small combat teams engaged in performing Infantry training tasks that require cooperation and response coordination among team members.

The crew-served weapons in the weapons squad are two antitank weapons and

_____ M60 machineguns.

Figure 1

TWO

The M60 machinegun is a weapon served by a crew of three --

A machinegunner

An assistant machinegunner, and

An ammo bearer.

For this reason the machinegun is called a _____-served weapon.

Figure 2

CREW

Multiplying the number of crew members for one machinegun by the number of machineguns in the weapons squad, shows that _____ of the squad's 11 members belong to the machinegun crews.

Figure 3

SIX

The rifle platoon weapons that are crew-served are the two antitank weapons and the two M60 _____.

Figure 4

MACHINEGUN

The rifle platoon leader assigns general firing positions and missions to each one of his _____ crew-served weapons.

Figure 5

SECTOR

A sector of fire is a section of terrain designated by right and left sector _____.

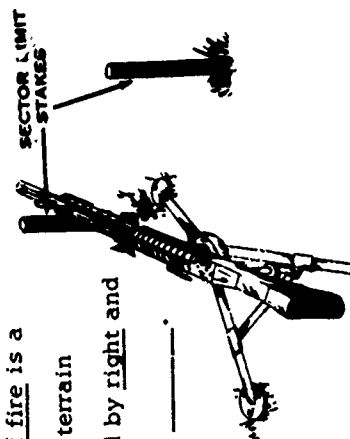


Figure 7

FOUR

A machinegun mission which the platoon leader always assigns is _____.

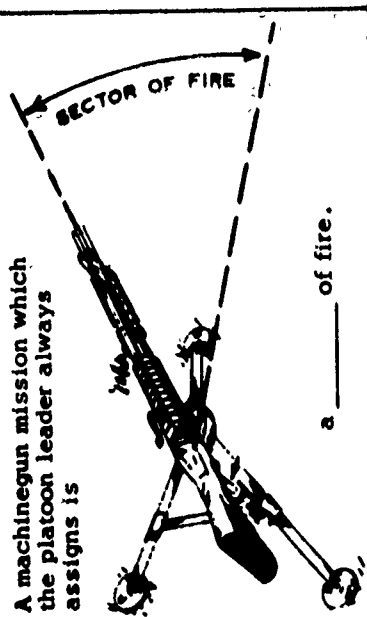


Figure 6

LIMITS

The tripod mount of the M60 machinegun enables the gun to traverse approximately 45° on the traversing mechanism. What this means is that the sector of fire of the M60 machinegun is approximately _____ degrees.

Figure 8

In carrying out an assigned mission, an individual member of a small Infantry unit may be virtually perfect in performing his particular duties; however, in a rapidly changing combat situation, the necessity for interaction, communication, and cooperation among team members is obviously essential to the effective performance of the team as a whole. The Army needs efficient performance from its teams--if an individual cannot operate effectively in his team, then his individual skills are of little value to his team's over-all performance.

With these views in mind, we have conducted a variety of experiments in an effort to determine what are some of the factors operating among members of small groups which increase their motivation to work together effectively and, thus, make their unit a highly effective one.

As we discover and define these factors, we hope to be able to establish training conditions which will produce habits of maximum cooperation and coordination among team members. Some of the kinds of habits we mean are: attending to what other team members are doing, passing on appropriate information and suggestions to other team members, taking over the functions of another member when that member cannot carry on.

Another Task we are working on at present is again concerned with leadership, but from a different viewpoint. This research is aimed at leadership at senior levels of command and is being conducted for the Command and General Staff College. As a result of coordination with the Command and General Staff College, first priority in this work is being given to preparation of a source document to be used at the College. This document will develop a coherent framework for consideration of leadership problems at senior levels of command. Existing applicable knowledge and theory will be used for a systematic analysis of command leadership, discussed in a practical context of leader problems and actions.

In this orientation, I have emphasized research on Infantry problems. HumRRO's total program includes research on similar training problems for other Army branches as well as research toward the development of a training technology which will be generally applicable. If you should be interested in obtaining further information regarding the research I have discussed or in suggesting possible problems for HumRRO research, please write to us at the Infantry Human Research Unit.

CHAPTER 11

**MISSIONS, FUNCTIONS AND ORGANIZATION OF THE US ARMY
COMBAT DEVELOPMENTS COMMAND INFANTRY AGENCY**

Published Separately Classified Annex A

CHAPTER 12

THE TOP TEN PRIORITY INFANTRY DEVELOPMENTAL MATERIEL ITEMS

Published Separately Classified Annex A

CHAPTER 13

**VISUALIZATION OF INFANTRY-TYPE COMBAT OPERATIONS
IN THE 1970-1980 TIME FRAME**

Published Separately Classified Annex A

CHAPTER 14

PROJECT TEAM

Published Separately Classified Annex B

CHAPTER 15

ASSISTANT COMMANDANT'S FORUM BRIGADIER GENERAL JOHN NORTON

General Norton opened the Forum with a poll as to whether the Instructor's Conference had been of value to the conferees. It was unanimously voted that the Conference was immeasurably worthwhile and should be conducted on an annual, rather than biennial basis. Conferees further recommend that the Conference be conducted in July of each year.

The first items discussed were the apparent strengths and weaknesses of the ROAD divisional structure. The Infantry School maintained the following position on the characteristics of the ROAD organization:

1. Advantages:

a. Flexibility in Tailoring. The ROAD concept or organization facilitates: strategic tailoring, the predeployment "stacking" of a division to satisfy envisioned operational requirements; external tailoring, the transfer of units from one division to another; and internal tailoring, the tailoring of brigades as required for specific missions.

b. Uniform Organization at Each Echelon. The Infantry, Mechanized Infantry, and Airborne Infantry battalions are organized essentially the same in ROAD. Likewise, the various brigade headquarters and headquarters companies are generally the same. Except for certain significant differences in the airborne divisions, the divisional bases of other ROAD divisions are essentially the same.

c. Increase in Aviation. There is an increase in divisional aircraft in ROAD of approximately 100 percent. By the same token, the number of types of aircraft in the division has been reduced.

d. Functionalized Combat Service Support. Logistical support in the ROAD division is provided along functional lines. Therefore, the commander is provided a single channel for each function (supply, maintenance, etc.). One-stop maintenance service is provided.

e. Span of Control. The span of control at battalion level is optimal in ROAD. An Infantry battalion can be reinforced with one or more tank companies without having an excessive span of control.

f. Opportunity for Command. The ROAD organization increases the opportunity for command by majors and lieutenant colonels.

2. Disadvantages:

a. Antitank Capability. The antitank capability of the ROAD battalion is generally inadequate beyond 200 meters. In the rifle company there are the M72 LAW (220 meters range), 90mm RR (360 meters range), and the 106mm RR. The 90mm RR is of marginal value since it and its ammunition can be carried for only short distances. The 106mm RR is restricted to negotiable terrain. The battalion AT weapon, the ENTAC, is generally unsatisfactory because of the training required for gunner proficiency, the minimum range limitation of the weapon, the lack of an assault gun capability, and its limited capability during periods of poor visibility.

b. Air Defense Capability. The only air defense weapon available in the ROAD division is the .50 caliber machinegun. This is a critical deficiency.

c. Size of the Headquarters and Headquarters Company of the Maneuver Battalions.

This company is too large and should be broken out into a headquarters and headquarters company and a combat support company. It currently has the headquarters section, four combat support platoons and one combat support section, and three combat service support platoons.

d. Army Transport Aircraft at Brigade. The Infantry School has officially taken the position that four utility aircraft should be organic to the ROAD brigade.

e. Armed Helicopters. Currently, of the 14 offensively armed helicopters in the ROAD division, only 6 (3 w/ATGM and 3 w/XM-3) are available to habitually support the maneuver elements. The others are in the air cavalry troop. There is a requirement for more armed helicopters to support the maneuver elements of the division.

f. Communications. There is a requirement for a lightweight radio for communications within the platoon. At company and battalion level there is a requirement for a lightweight radio set with a range of 16 kilometers which is man-portable and capable of being mounted on a vehicle.

g. Pathfinder Detachment. A Pathfinder detachment is authorized the ROAD division only as an augmentation. The emphasis on the utilization of Army aircraft requires that this detachment be organic to the division, not only to provide terminal guidance but also to train unit Pathfinder teams.

Col J. D. Kiersey, USA Armor School, posed the question: "Do we really need a mechanized division? Should the Armor School or Infantry School be responsible for mechanized Infantry doctrine?"

The problem was discussed by representatives of the Combat Developments Command Infantry Agency, The Infantry Board, Command and General Staff College, The Infantry School, The Armor School, and the British Liaison Officer. It was concluded:

1. We do need a mechanized division to span the gap between the Infantry division and the heavier armored division.
2. The Infantry School should have proponency for the mechanized division doctrine through brigade level.

Lt. Colonel F. H. Gregg, USA Combat Surveillance and Target Acquisition Command, posed the next question. "Assuming that the Command and General Staff College has published an SOP for use in the ROAD division with regard to air reconnaissance and surveillance activities:

1. What instruction is given on the SOP at the Infantry School?
2. Is the Infantry School satisfied with SOP?
3. What bugs are apparent or have developed?

A summary of the discussion that developed from this question is as follows:

Representatives of the US Army Command and General Staff College and the Infantry School were not aware of any SOP change the US Army Command and General Staff College had prepared concerning the employment of the ROAD ASTA platoon. Representatives of Infantry School stated that the most recent division SOP from Leavenworth, as shown in Draft Change 1

to FM 61-100 dated 1 February 63, did not include such details. It was also stated that the employment of the ASTA platoon was taught at the Infantry School in a problem titled "Tactical Employment of the Army Aircraft" and additionally in normal tactical exercises. It was further stated that the ASTA platoon SOP prepared by USA Combat Surveillance and Target Acquisition Command was and will be used to support Infantry School resident instruction pending receipt of something applicable to all schools from Fort Leavenworth.

Lt Col M. C. Miller, USA Logistics Management Center, posed the next point of discussion: "Is the support rendered by the wholesale system of logistical support responsive to the needs of the Infantry? If not, identify the areas in which improvement can be made." The consensus of opinion of the forum was that the Infantry has no concern as to the type system used as long as the units receive the required logistical support. The representative from the Office of Assistant Chief of Staff for Force Development, DA, Major W. A. Brown, then advised the conference on the status of current studies on the logistical support system, COSTAR and RODAC 70.

General Norton closed the forum with a summary of the points which had been covered.

CHAPTER 16

ASSISTANT COMMANDANT'S CLOSING REMARKS

BRIGADIER GENERAL JOHN NORTON

Gentlemen

At the opening of the Conference, I told you that I hoped to have an exchange of ideas and to answer all your questions prior to your departure.

Upon reviewing the week's events, I find that we have accomplished a great deal. It has been a full week - one in which a wealth of information was presented and thoroughly discussed. We were delighted by your keen interest in our presentations and your apparent desire to get to the reasoning behind our latest developments. We thoroughly enjoyed your many questions and your very helpful comments and recommendations.

And, it is evident from what I have seen and heard that you made the most of your time not only in the classrooms and at demonstrations, but in your visits to the various Instruction Departments, staff offices, and agencies here on Post. You have given us much food for thought, and I know you will realize benefits from the associations and discussions you had here at the Infantry School for many months. Certainly, the Conference was highly successful.

I was personally elated to find among our conferees not only a willingness to investigate, but also a willingness to accept new ideas. It was evident that you placed great reliance on research and development activities. This was true not only with respect to hardware, but in all aspects of our area of interest. Such a healthy attitude provides our generation of Infantry officers - living in a period of military evolution based on technological developments - with a tremendous advantage as it faces the future. Let us hope that we can maintain such a progressive, forward-looking attitude - for survival and success will depend directly on our ability to adapt and adjust to new concepts and to fully utilize the products of modern technology.

During the week we saw some of the tremendous strides that the Infantry has made. We had a good look at the flexible ROAD organizations and saw how the brigades and battalions operate during counter guerrilla, mechanized, and airmobile operations - and learned of the logistical considerations involved in planning such operations. We also learned of the new communications equipment which will facilitate command control of widely dispersed ROAD units on the battlefields of tomorrow. Our Weapons Department provided not only impressive weapons demonstrations, but also gave us insight into marksmanship training. And, no doubt you will weigh the advantages and disadvantages of the various automatic rifles for some time to come. The Airborne-Airmobility Department and the Mobility Department explained and showed to us the progress made in solving the Infantryman's constant quest for improved mobility.

But, regardless of the innovations of modern technology, the Rangers proved to us that the Infantryman still must be tough - and they showed us how to make him that way!

It was readily apparent that the Infantry made great strides even since the last Instructors' Conference. Our divisions have undergone reorganization - along entirely new concepts. Research efforts are bearing fruit in the form of new weapons, new equipment. Nuclear firepower became a tool of the battalion commander. It was evident that the Infantry's ability to move, shoot, and communicate vastly improved.

After we were brought up to date by the School, the Infantry research agencies and the Training, Evaluation and Control Group provided us with a glimpse into the future - and an impressive look it was!

In other words, we have brought you up to date and have given you an idea of what to expect in the years immediately ahead. More important, we hope we have provided you with a new realization of the capabilities of and requirements for our Infantryman and the necessity to keep him the best armed, most mobile, and best supported soldier in the world. I hope that we have done this in a manner of maximum benefit to you as an Infantry instructor.

Although these are Closing Remarks, there is no need for the Infantry Instructors' Conference to close. It can be a year-round affair - and I sincerely hope that it is. When you return to your various institutions and have more problems than solutions, do not hesitate to contact us.

As you are well aware, the Department of Nonresident Instruction offers some invaluable services, and I can assure you that the remainder of the Infantry School also stands ready to give you its fullest cooperation and assistance. Later this summer we will distribute to you a report of the Infantry Instructors' Conference. It will contain the complete texts of all presentations and should prove valuable both in preparing future instruction and as a ready reference.

I also urge you to share your thoughts with us - for we are always open to suggestions and comments. If there is any way that we may be of added service, just let us know.

Gentlemen, it has been a pleasure talking with you and having you at the Infantry School. It has been a worthwhile week for all of us. I wish you the finest of success in your assignments and have a safe journey home.

Thank you . . .

APPENDIX I

SECTION I

DIRECTORY OF UNITED STATES ARMY INFANTRY SCHOOL STAFF AND DEPARTMENT DIRECTORS AND PROJECT OFFICERS 1963 INFANTRY INSTRUCTORS' CONFERENCE

<u>POSITION</u>	<u>NAME</u>	<u>TELEPHONE</u>
COMMANDANT	Maj Gen C. W. G. Rich	545-5211
Aide-de-Camp	1st Lt C. P. Otstott	545-5212
ASSISTANT COMMANDANT	Brig Gen J. Norton	545-5296
Aide-de-Camp	1st Lt A. L. Foust	545-5296
CHIEF OF ACADEMIC STAFF	Col J. G. Cornett	545-5231
COORDINATOR OF INSTRUCTION		
Coordinator	Col M. C. Holden	545-4211
Project Officer	Lt Col R. A. Montgomery	545-4731
MANAGEMENT AND BUDGET OFFICE		
Chief	Lt Col D. P. Heekin	545-3167
OFFICE OF ADVANCED STUDIES		
Chief	Col V. L. Joseph	545-4293
Project Officer	Lt Col J. T. Carter	545-7934
OPERATIONS OFFICE		
Operations Officer	Col T. B. Ross, Jr.	545-4492
Project Officer	Maj J. F. Chambers	545-1073
SECRETARY	Col J. L. Gueymard	545-5231
STAFF SURGEON AND MEDICAL ADVISOR		
	Col R. M. Hall	545-5741
AIRBORNE-AIR MOBILITY DEPARTMENT		
Director	Col M. Paulick	545-5704
Project Officer	Maj F. Walters	545-4204

BRIGADE AND BATTALION OPERATIONS DEPARTMENT

Director	Col H. B. St. Clair	545-1522
Project Officer	Lt Col M. F. Schroeder	545-7071

COMMUNICATIONS-ELECTRONICS DEPARTMENT

Director	Lt Col D. A. Beyer	545-2702
Project Officer	Lt Col J. S. Miles	545-7432

COMPANY OPERATIONS DEPARTMENT

Director	Col W. R. Lynch	545-3701
Project Officer	Maj W. W. Lewis, Jr.	545-1341

MOBILITY DEPARTMENT

Director	Lt Col V. T. Mergler	545-1392
Project Officer	Maj H. E. Vincent	545-2861

DEPARTMENT OF NONRESIDENT INSTRUCTION

Director	Col C. E. Male	545-3403
Project Officer	Maj D. E. Ward	545-7283

RANGER DEPARTMENT

Director	Col J. W. Jackson	545-6824
Project Officer	Capt J. R. Chalmers	545-6768

WEAPONS DEPARTMENT

Director	Col L. S. Reynolds	545-4802
Project Officer	Maj S. W. Hawkins	545-3351

STUDENT BRIGADE

Commanding Officer	Col W. D. Short	545-1292
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SECTION II
 DIRECTORY OF
 FORT BENNING AGENCIES CONTRIBUTING TO THE
 1963 INFANTRY INSTRUCTORS' CONFERENCE

<u>POSITION</u>	<u>NAME</u>	<u>TELEPHONE</u>
COMBAT DEVELOPMENTS INFANTRY AGENCY		
Commanding Officer	Col K. E. Eckland	545-2101
Project Officer	Maj R. H. Volk	545-5762
INFANTRY BOARD		
President	Col R. C. Williams	545-1992
Project Officer	Capt C. P. Saint	545-3410
INFANTRY HUMAN RESEARCH UNIT		
Chief	Lt Col T. E. Lawrence	545-3734
Project Officer	1st Lt G. T. Harper	545-1278
TRAINING EVALUATION AND CONTROL GROUP		
Chief	Col H. E. Strange	545-6704
Project Officer	Capt L. D. Fountain	545-6401

APPENDIX II

DIRECTORY OF CONFEREES

1963 INFANTRY INSTRUCTORS' CONFERENCE

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Col Eugene B. Conrad	USA Aviation School Fort Rucker, Alabama
Col Ernest C. Dameron	Naval War College Newport, Rhode Island
Col Donald D. Dunlop	USA War College Carlisle Barracks, Pa.
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Col Lee Wallace	Defense Intelligence School Washington 25, D. C.
Lt Col Edward J. Cavanaugh	USA Force Academy, Colorado
Lt Col Richard K. Delaune	USCONARC Fort Monroe, Virginia
Lt Col Curtis E. Dodson	USA Civil Affairs School Fort Gordon, Ga.
Lt Col Francis H. Gregg	USA Combat Surveillance and Target Acquisition Command Fort Huachuca, Arizona
Lt Col R. W. Griffin	USA Armor School Fort Knox, Kentucky
Lt Col John C. Hansen	USA Artillery and Missile School Fort Sill, Oklahoma
Lt Col Richard L. Jones	USA Aviation School Fort Rucker, Alabama
Lt Col Frank J. Kent	USA Command and General Staff College Fort Leavenworth, Kansas

Lt Col Henry R. Lema	USA Chemical Corps School Fort McClellan, Alabama
Lt Col Henry J. McAllister	USA Ordnance Center and School Aberdeen Proving Ground, Md.
Lt Col Ralph B. Merrick	USA Finance School Fort Benjamin Harrison Indianapolis 16, Indiana
Lt Col Maynard C. Miller	USA Logistics Management Center Fort Lee, Virginia
Lt Col Clifford D. Rhodes	USA Adjutant General's School Fort Benjamin Harrison Indianapolis 16, Indiana
Lt Col Lewis J. Schelter	Officers Assignment Directorate Office of Personnel Operations, DA Washington 25, D. C.
Lt Col L. S. Tully	Army Advisory Group Air University Maxwell Air Force Base, Alabama
Lt Col Gené A. Walters	Officers Assignment Directorate Office of Personnel Operations, DA Washington 25, D. C.
Major William A. Brown	Assistant Chief of Staff for Force Development, USA Department of the Army Washington 25, D. C.
Major Paul E. Buckwalter	USA Engineer School Fort Belvoir, Virginia
Major Robert L. Harper	USA Military Police School Fort Gordon, Georgia
Major Hugh B. Harrison	USA Signal Center and School Fort Monmouth, New Jersey
Major Bert H. Herigstad	USA Artillery & Missile School Fort Sill, Oklahoma
Major John L. Jennings	USA Primary Helicopter School Fort Wolters, Texas
Major Orris E. Kelly	USA Chaplain School Fort Hamilton, New York

Major George C. Kliefoth	US Marine Corps Schools Quantico, Virginia
Major Robert L. Lyons	USA Quartermaster School Fort Lee, Virginia
Major Jack V. Mackmull	USA Command and General Staff College Fort Leavenworth, Kansas
Major James McKee	Brooke Army Medical Center Fort Sam Houston, Texas
Major Charles E. Moore	USA Judge Advocate General's School Charlottesville, Virginia
Major Edward J. Nix	USA Ordnance Center and School Aberdeen Proving Ground, Md.
Major Jack Ostrovsky	USA Chaplain School Fort Hamilton, New York
Major E. B. Peters	Royal Canadian School of Infantry Camp Borden, Ontario, Canada
Major Thomas J. Ralston	US Naval Amphibious School Norfolk, Virginia
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Major Richard C. Schulze	US Marine Corps Schools Quantico, Virginia
Major Craig T. Wesley	USASA Training Center and School Fort Devens, Massachusetts
Major Richard E. Zastrow	USASA Training Center and School Fort Devens, Massachusetts
Capt Gasper Blandeburgo	USA Southeastern Signal School Fort Gordon, Georgia
Capt Robert E. Cormier	USA Finance School Fort Benjamin Harrison Indianapolis 16, Indiana

Capt Roger A. Culbertson	USA Signal Center and School Fort Monmouth, New Jersey
Capt Thomas F. Dooley	USA Military Police School Fort Gordon, Georgia
Capt David G. Geary	USA Northern Warfare Training Center APO 733 Seattle, Washington
Capt Harry E. Hall	USA Southeastern Signal School Fort Gordon, Georgia
Capt Richard G. Hallock	USA Special Warfare School Fort Bragg, North Carolina
Capt Howard C. Hartsfield	USA Intelligence Center Fort Holabird, Maryland
Capt John A. Islin	USA Primary Helicopter School Fort Wolters, Texas
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1963 Infantry Instructors' Conference

APPENDIX III
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USA Combat Developments Command Infantry Agency, Fort Benning	5
USA Human Research Unit, Fort Benning	2
Training, Evaluation, and Control Group, Fort Benning	1
United States Army Infantry Center	50
United States Army Infantry School	250